Gleanings in Bee Culture

"Created to help beekeepers succeed."

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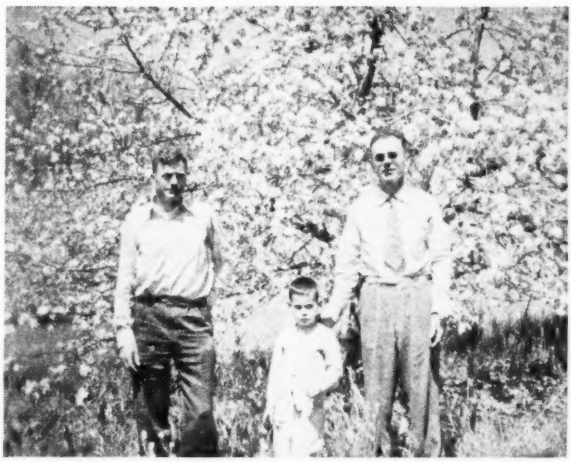


The writer in a Shenandoah apple orchard with H. L. Maxwell who rents over 1000 colonies of bees every spring to Virginia apple growers. With Mr. Maxwell is his son.

Pollination Problems

By Charles Mraz, Middlebury, Vermont

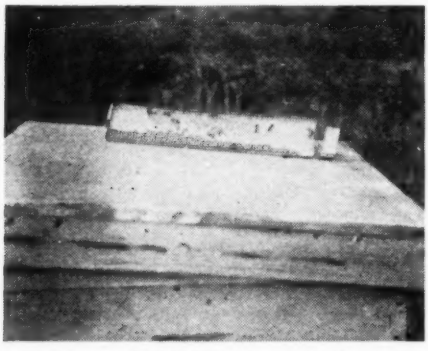
Some Methods are Fairly Satisfactory—Others in the Experimental Stage

Our so-called Modern Age has not only complicated the matrimonial life of us humans, but has also created problems in the love life of apple blossoms and other plants. In most apple-growing areas, more and more pollination is getting to be an important factor in the growing of apples. Two things are involved that influence an apple set. Interplanting of suitable varieties for cross-pollination and the weather. While the grower can do something about interplanting, as a rule most orchardists like to specialize in some particular variety of apple that is best adapted to soil, climate, and markets in that locality. Interplanting in such cases is rather a nuisance and means growing varieties not suited to produce the most profit. The facts are, very few orchards have suitable interplanting for good cross-pollination. The other factor, weather, is something one can do nothing about. Here in the East it is not unusual to have cold rainy weather all during apple bloom. Quite often it is the rule.

In an orchard, the overhead keeps up just the same, regardless of the crop, and lately some effort is being made to take some of the gamble out of pollination. One big step in this direction is the collection and sale of apple pollen in the Northwest to orchards in the East. Pollen thus gathered by hand seems to be of good viability and ideally suited for cross-pollinating eastern apple orchards. It can be kept alive for long periods with proper care—

Bees in the H. L. Byrd orchard located at Berryville, Virginia, with pollen traps on the entrances.

Closeup of perforated metal screen pollen trap.



Tray for perforated screen trap to catch the pollen. The tray is covered with 4-to-the-inch wire mesh to allow pollen to fall through, but keep bees out.

Hook or claw type of pollen trap or tray

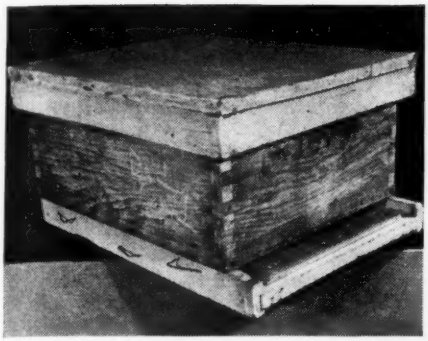
two or more years. The cost—about $4.00 per volume ounce—is rather high because of the great amount of labor involved in collecting the pollen.

Many different methods of pollination have been used to apply this pollen to the blossoms. **One method is by hand,** applying the pollen with a small brush on each blossom. While this is a very effective method, a grower with 50 to 1000 or more acres of apples to pollinate faces a problem of labor that would be fantastic in cost as all this would have to be done in the two weeks that blossoms are open. In actual practice, however, it isn't necessary to apply pollen to every blossom, but just those in easy reach and letting the bees spread the pollen further to other parts of the tree. Even so, it is too big a job.

Another method is that of spraying. The pollen is mixed with water and applied with a spraying rig. While good in theory, its drawback is the fact that it does not work. The water and pressure seem to destroy the pollen and there is a great deal of waste.

Other methods include scattering pollen by plane, shooting it into the air with shotguns, motor-driven fans, etc. All these methods are not practical because of the large amounts of pollen they would require to be effective.

The most satisfactory method of spreading pollen is to have the bees do it. It is economical in the use of pollen and cheap considering the bees are working for almost nothing. All that is needed for equipment is a suitable type of insert to hold the pollen so that outgoing

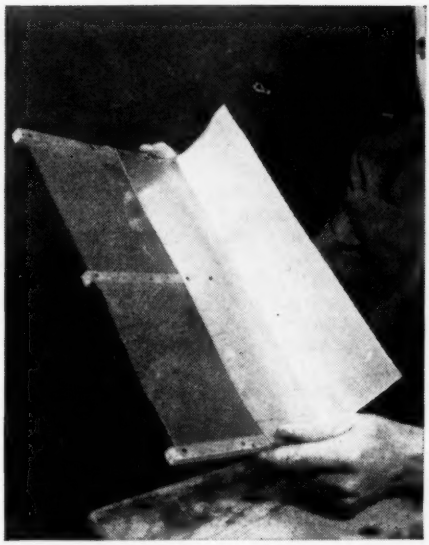


Claw- type trap in entrance. A practical trap of this type should be more elaborate with hood over it to keep out rain and sun and to force the bees to walk through the claws. It should also be made so the tray of pollen can easily be removed for emptying.

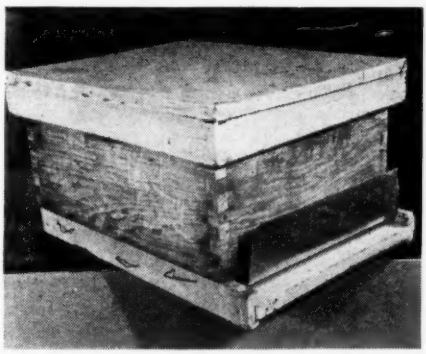
bees must walk through it and thus get covered with the pollen just as they leave the hive. Most of these inserts are based on the principle that incoming bees use the bottom of the entrance and outgoing bees usually come out the top of the entrance. The simplest insert is a sheet of metal with suitable spacers to keep it halfway up in the entrance. Outside of the hive the metal is bent upward for a space to hold the pollen and to force the bees to walk out through it.

While even this method will not work in bad weather when bees cannot fly, yet under the worst conditions there are always a few hours of sunshine during bloom, and if pollen is used at this time a few hours is enough time to give a good crop of fruit. This is because it eliminates the factor of chance. When a bee flies from a hive covered with a compatible variety of pollen, it starts pollinating immediately when it touches a blossom. Under natural conditions, cross-pollination is not accomplished until a bee first visits a pollinating variety and then flies to other varieties to be pollinated. When the pollinating varieties constitute only a small percentage of the orchard, the percentage of bees actually setting fruit is in direct proportion to the percentage of pollinating trees. With the insert method, pollination can be almost 100 percent effective.

In the past several years some effort has been made to collect apple pollen by the use of bees and suitable traps. Here again we have a



Insert for distributing pollen to apple blossoms. This is one type, and there are other types that may be more satisfactory.



Insert in place. The openings on each side should be closed to prevent wind and flying bees from blowing pollen out of the traps and wasting it.

nice theory and since I had the experience of going on a pollen-collecting expedition to Virginia in the spring of '49, I can assure you a lot more research has to be done before this method of collecting pollen can be practical. The biggest problem is a method to treat the pollen to keep it viable or alive. Bees apparently mix pollen with honey or some other substance when collecting it, for pollen in the pellet form does not live very long. If the bee-collected pollen is mixed thoroughly with lycopodium powder and kept dry and cold, it will

keep alive for some time. This is a very difficult job to do by hand if one has any amount of pollen, and perhaps can be done by mechanical means without injuring the pollen grains.

Another possibility is breaking up the pellets with a solvent such as water and removing any foreign substances that way, drying, and then mixing with lycopodium powder. Just how this will work or exactly how it can be done, so far as I know, still remains to be found out. If any have had experience along this line, I would like to hear from them.

Another problem is the pollen trap. Traps that operate by restricted openings such as screens or holes punched in metal do not seem to be satisfactory. They restrict the bees' passage at the entrance too much and they get too small a precentage of the pollen. In spite of the fact that a bee may not be credited with having much reason, it does soon learn how to carry pollen through such a trap without losing it. A trap along the idea of the one illustrated seems to have better possibilities. Even if it doesn't catch any more pollen, it does have the advantage of not restricting the passage of bees in and out of the entrance. As can be seen by the illustration, long rows of wire teeth or combs made from wire fly screen are soldered to a screen-covered tray so they slant outwards. Bees walking over such a trap will occasionally get their pollen hooked off, whereas bees not carrying pollen are scarcely restricted at all since their legs without pollen go through the claws freely. Such a trap would have to be more elaborate with a cover and other improvements to keep out sun and rain and also force the bees to walk over the trap and not fly over it.

As anyone who has ever trapped pollen knows, bees do carry enormous amounts of it, and it should be possible to collect a quart or more of apple pollen from a hive in two weeks during bloom. This amount of pollen, were it possible to use it for pollination, would be of considerable value to both the beekeepers and fruit growers, and any research on this problem would seem to me to be well worthwhile.

This problem of collecting pollen at the present time applies mostly to apples, but it is possible that its application may prove valuable to other plants, anything in the line of vegetables, flowers, legumes, and fruits. It is possible, for instance, to collect pollen and keep it over for pollination the following season.

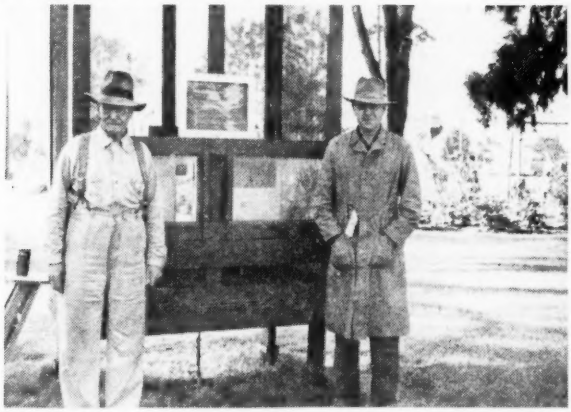
This method of pollination seems to me to hold many possibilities, and just how far it will be used depends on the imagination and ambition of those who can profit by it.

Essex County, N. J., Beekeepers Hold Honey Judging Contest

Members of the Essex County Beekeepers Association, Thaddeus McEvoy, 75-year-old bee enthusiast of West Orange, New Jersey, and 14-year-old Donald Schindler of Bloomfield, New Jersey, watch judges, left to right, Francis W. Gravely of The A. I. Root Co. of New York, Clarence B. Riker of West Orange, New Jersey, and Paul Holcombe, State Apiarist of New Jersey, passing judgment on their entries. (Mr. Riker passed away on January 24.)—Photo courtesy Newark Evening News.

Bees Under Control

By W. B. Crump, Oakland, California



Right: W. B. Crump, amateur beekeeper, Oakland, California.

Left: D. L. Hopkins, Alameda County bee inspector, Oakland California.

The Alameda County Beekeepers' Association of Oakland, California, maintained that bees under control could be kept in any public city park. A concept is one thing and the execution of it is another. A design for a wire screen cage holding two hives of bees was drawn up by one of the members, built according to plan, and placed in his own front yard as close to the street as possible. It seemed to work.

The City of Oakland's Park Department was contacted and cooperation in the project was given to the extent that a spot in Moss Wood Park was selected. The yield of honey in comb section form was given to the local childrens' hospital twice within the year. Supervision and care is the responsibility of the Alameda County Beekeepers' Association through its members numbering over 100 and largely amateur beekeepers, although there are some commercial men.

Up to the present time the Park Department will verify the statement that no one has registered a complaint. Many people, especially children, have passed by and inspected the bees. The bees go in and out at the top of the cage ten feet from the ground and as people are not in their direct line of flight the danger of being stung is almost completely removed. If used in a public park it could also be used in one's back yard where children play.

For public park use, the screen should be ⅛-inch galvanized iron with Plexiglas windows and a stout turnbuckle arrangement to hold the cage and all from being upset. The hives should face south or southwest as is customary.

[This appears to be a splendid project for educating the general public regarding the importance of honey bees to agriculture. With this set-up the bees are safe from pilfering and the people nearby watching the bees are not likely to be stung. It is hoped that other associations will launch similar projects.—Ed.]

Child interest photo of two colonies of bees in a cage with an open top at Moss Wood park, corner of MacArthur Blvd. and Broadway in Oakland, California. Note children's playground in rear.

How to Sell the Honey Crop

By T. J. Rowe, Arlee, Montana

We have had some experience in selling our crop in two different states. If one has honey produced locally and is located on a main highway and hangs out a good big honey-for-sale sign, one that can be read several hundreds of yards in both directions, I don't believe any one will have any difficulty in selling the crop.

Don't expect to build up a big trade in a hurry. Our trade has grown by leaps and bounds in several states. In only two did we locate long enough to build up a good business from repeat orders.

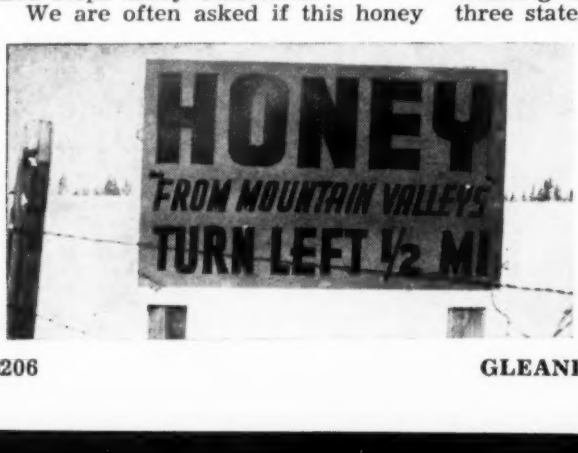
In Idaho when the honey market went to pieces in the 30's we hung out a small sign and in a week's time sold $17.00 worth. This was encouraging, so we put out signs down the road a mile and two miles from the place, six or eight in a place strung out for several hundred yards somewhat on the order of the Burma-Shave signs so plentiful over the Northwest. These signs do more good than one big sign near the home yard. We sold honey to people from every state in the Union and some from foreign countries. We disposed of our own crop and bought considerable from neighbor beekeepers.

At our present location we have one big sign, then two signs a mile and two miles east and west—four in all. The signs are six by eight feet, have the word Honey in big letters across the top. Below it reads: From Mountain Valleys. The distance to the home sign is printed below. This tends to get the fast drivers looking for the main signs and stops many customers.

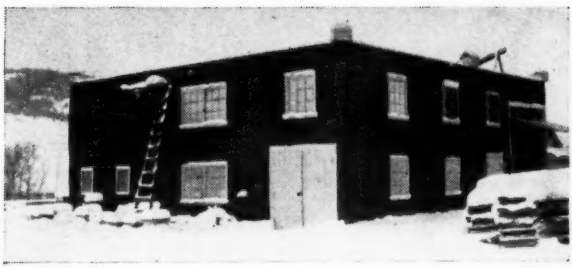
We are often asked if this honey is first grade, whereupon we tell them to sample it. If it tastes good to them it's tops—if it doesn't it may as well be fourth grade as far as they are concerned. If we urge customers to sample our product the first time they come, we sell more than we otherwise would.

California has much wonderfully fine honey as well as the states of Washington and Oregon, but these three states furnish our best out-of-

A big sign pointing to the apiary



One of the signs we have placed on the road approaching one apiary.



A good-sized honey house is necessary if the work is to be done efficiently and neatly.

state customers. Why? Well, they like a different flavored honey for a change. We have a slogan written across the top of each label: "A remembrance from the land of shining mountains". People like that. It works out well if they wish to ship it to friends, which many do.

It has been our experience that many batches of honey are harmed in the process of either extracting or bottling. Too much heat, some times too long sustained heat, causes good honey to lose its comby flavor. This we do our best to avoid and have many favorable comments.

We find that Idaho people like Idaho honey, New York people like that dark buckwheat honey. Some prefer it to clover or basswood.

Handle your product in the kind of containers people prefer, give prompt courteous service, ask customers to come again and you will have a honey trade in short order, if you take measures to let the traveling public know of your product as they drive along the highways.

It's a great pleasure as well as a privilege to meet travelers from every state in the Union. The most of them like to take a breathing spell and chat a few minutes. Many ask to go through the honey house, especially at extracting time, and inquire about hunting and fishing, the roads, etc., and if they are treated in a friendly manner they will be customers in the future.

I have visited as many as possible of the commercial bee men in Western Montana. I haven't seen one of them who was not handling his product in a careful, conscientious manner. Our state inspector has the authority to demand that any careless operator clean up, but if there are offenders they are few and far between.

I have a friend beekeeper near who had a clean well-arranged honey house, but recently he spent over $3000 on it, all on the liquefying and bottling end, put down inlaid linoleum, perfectly sealed and painted walls and ceilings, making it a beautiful piece of work. Some inspector could blow up and find a lot of fault, for none of our systems is perfect. I have been an inspector for many years. There is a lot about it that I don't like. Neither would I like to see the public mistreated. We can hang onto our freedom or we can drift off into a state-managed economy as we are swiftly doing.

Michigan Inspector's Report

By H. H. Root

At the mid-winter meeting of the Michigan Beekeepers' Association held on February 1 and 2, Don Barrett, the State Inspector, reported that all counties in Michigan had been worked except four. In most of these four there were very few colonies of bees. Of the 28 inspectors, many had put in over 100 days. Mr. Barrett thinks the report of the total number of colonies in the state —183,000—may be high. However, an absolutely accurate count is impossible. There are, he said, 518,000 acres devoted to fruit, legumes, or plants needing bees, so there are not nearly enough hives of bees to make possible one colony per acre. Mr. Barrett referred to an Iowa report in which the seed crop had been quadrupled when the number of colonies per acre had been increased from one to five.

In one county in Michigan, apiaries had been found having as much as 12.6 percent AFB. This, of course, was an exception and far above the state average. An alarming amount of AFB was found in commercial apiaries where sulfa had been fed properly.

A Western Bee Trip

Dr. F. R. Shaw, University of Massachusetts at Amherst

[Dr. Shaw, Professor of Entomology at the University of Massachusetts, in addition to teaching beekeeping, is also engaged in extension and research work. During the past summer he had the unusual opportunity of visiting beekeepers and research laboratories in the USA and Canada. His article should give all of us a better birdseye view of our industry.—Ed.]

During the past summer the author and his family made a rather extensive trip across the country. They were accompanied during part of the trip by M. A. Ghani from Pakistan. Certain observations were made during the trip which may be of interest to beekeepers who might contemplate a similar trip.

In order to reduce expenses, we planned to camp wherever possible and to prepare our meals rather than to eat in hotels and restaurants. We carried two tents, one 9 x 9, which was used if we intended to stay more than overnight in a spot; the second was a nylon mountaineers' tent used for overnight stands.

Our trip covered a total distance of 14,000 miles. Altogether about 40 laboratories, universities, commercial honey producers, and honey processing plants were visited. Only those relating directly to beekeeping will be discussed in this article.

Our first visit was to the Beekeeping Division Central Experimental Farms at Ottawa, Ontario. Here we met C. Jamieson, Jack Arnott, and C. B. Gooderham, who had recently retired as Dominion Apiarist. Among the investigations being conducted at Ottawa are the following:

1. Management of bees for honey production.
2. Testing of stocks or strains of bees for honey production.
3. Pollination of various cultivated crops.
4. Chemical control of bee diseases.
5. Wintering of bees.

At the suggestion of Mr. Jamieson, we visited the apiary of Henderson Brothers at Carlton Place. The honey house proved to be very modern. One of the features of particular interest to us was the

Dr. F. R. Shaw

outfit for the pasteurization of honey. This had been installed in order to overcome the problem of moisture content of the honey.

The Ontario Honey Cooperative at Toronto was our next stop. Tom Shields, the general manager of the plant, was very kind and gracious in his reception. He showed us the entire plant so that we were able to observe the processing of honey from the time of its arrival until it was packaged.

From Toronto we drove to Guelph, where we met Messrs. Burke and Smith of the Department of Apiculture of the Ontario Agricultural College. We discussed the courses in beekeeping at this college and the investigations being carried on. Among the problems under investigation are the following:

1. Bee breeding — most of the work on this project is conducted on Pelee Island.
2. Various methods of overwintering queen bees.
3. Poisoning of bees by insecticides.

The remainder of our time in Ontario was occupied by visits to the apiaries of Wm. Hodgson at Jarvis and Dyment Bros. at Smithville. At

both places we saw excellent honey houses and many ingenious methods for the handling of honey. Of special note were the Hodgson type extractor which extracts honey from 96 frames at a time; the Hodgson wobble saw type of uncapper; Hodgson's modification of the OAC strainer and his wax-rendering outfit. According to Mr. Hodgson, two persons have been able to uncap and extract 16,000 pounds of honey in four hours, using his equipment. At Dyment Brothers we saw the best device for conditioning honey that we observed during the entire trip. Supers of honey are placed in a room in which hot air is circulated by a blower and system of air vents. The temperature is thermostatically controlled. By leaving honey in this room overnight from one to three percent of the moisture of the honey can be removed. Also, the honey is warm so that the process of extraction is improved. Another device which saved much labor was the escalator type device which could be used to elevate supers from the floor where the honey was extracted, to the storage room.

From Dyment Brothers we returned to the United States via Niagara Falls. The majesty and grandeur of the Falls are such that they impress themselves on the observer regardless of the number of times they are seem.

The plant of The A. I. Root Company at Medina, Ohio, was our next stopping point. Although not forewarned of our visit, Huber Root was most kind in devoting time to show us the entire plant. He was extremely patient in answering our questions. One point that particularly impressed us was the effort of The Root Company to develop supplementary products in order to provide employment at all times for the employees. Such efforts should be more universal.

From Medina we drove to the Legume Seed Research Laboratory at Columbus, Ohio. The investigations at this laboratory on beekeeping are under the direction of Dr. A. W. Woodrow. We found that the work of Dr. Woodrow was very basic and broad in nature. His major projects include the following:

1. The study of pollen and nectar resources of the region and their relation to colony development and legume production. Dr. Woodrow has improved the earlier type of pollen traps and uses them to measure pollen sources as well as the influence of colony condition on collection.

2. Management of bees for pollination. This includes the comparative effectiveness of the pollinators and bee coverage measurements in relation to competing plants and colony consideration.

Some of the results already obtained from Woodrow's investigations are the inadequacy of solitary and bumblebees for the pollination of red, alsike, and mammoth clovers under the existing conditions. He has demonstrated that honey bees are effective pollinators of the plants listed above as well as sweet clover.

Following our visit to the Legume Seed Research Laboratory we drove to Gillivan, Ohio, to the Ohio Honey Cooperative. Lloyd Gardner, the manager of the Cooperative, conducted us through the plant, which at that time was packing honey for the school lunch program. At this plant the honey is heated to about 160 degrees F., filtered, and then packaged.

Our next stop was at the University of Illinois. Unfortunately, we did not synchronize our schedule with that of Dr. V. G. Milum, so we were unable to observe the beekeeping facilities and program at that University.

From Urbana we drove to Hamilton to the Dadant and Sons Manufacturing plant. Here we saw equipment for rendering of wax, the machinery for dipping wax candles. We learned of the experimental work being carried on under the direction of G. H. Cale, Jr., and also of a hive heating project.

For some time we had followed the studies of Frank Pellett on plants of value to bees. Hence, we drove to the Pellett Honey Plant Gardens at Atlantic, Iowa, for our next visit. Melvin Pellett spent considerable time showing us the various plants under cultivation there. Of particular interest was the Pellett Clover, named for Frank Pellett, and the Mountain Mint, which is of value for its high content of essential oils.

At Iowa State College we found a rather broad program of research on beekeeping. The projects are

conducted by Dr. O. W. Park, whom we found to be very cordial. Among the investigations being carried on at Iowa are the following:

1. Phenological and meteorological factors influencing honey production.

2. Factors influencing the sugar content and availability of nectar to bees.

3. Improvement of bees through breeding. This project consists of basic studies on the inheritance in honey bees as well as a practical program on bee breeding with emphasis on disease resistance.

4. A cooperative project with other departments on the role of the honey bee in the pollination of alfalfa and red clover.

Our next stop was at the North Central States Bee Culture Laboratory at Madison, Wisconsin. Here, under the direction of Drs. C. L. Farrar and W. C. Roberts, an intensive program of bee breeding and colony management is in progress. Some 300 colonies are maintained at Madison for experimental work on testing lines of stock, studies of management practices, and to conduct a program of queen rearing and bee breeding. In addition, at Kelley's Island in Lake Erie some 750 nuclei and 100 colonies are maintained for the production of controlled hybrid queens for test purposes.

Dr. Roberts is in charge of the breeding program. The testing of stock is being carried on mainly by Lloyd Moeller. Dr. Farrar is carrying on work on management, Nosema disease, the influence of temperature and moisture on bees, and a final cooperative project on hive heating.

From Madison we drove to St. Paul, Minnesota, where we met Dr. M. H. Haydak, who is in charge of the beekeeping work at the University of Minnesota. Dr. Haydak is conducting research on the nutrition of bees with special emphasis on the protein requirements. He has recently shown that the inadequacy of soybean flour as a pollen substitute is due in part to the absence of nicotinic acid and riboflavin. However, some other factor or factors are also responsible. In an investigation of the vitamin content of the food of larval worker and queen bees, Haydak found little variation in the food of the latter. However, a sharp decline in thiamin, niacin, and pantothemic acid was observed in older worker bees. Dr. Haydak has recently completed a survey of the effects of wintering practices on winter loss. The results of a five-year survey indicate that the percentage of colonies dead, weak, or queenless is seven for heavily packed, 13 for light packed, and 22 for unpacked.

Our next stop was at North Dakota State College at Fargo. Here we met Dr. Alex Munro. We discussed the work in beekeeping at that institution and visited the college apiary. Among the contributions to beekeeping made by Dr. Munro are his investigations on the physical properties of honey and methods of wintering.

At Pullman, Washington, we met Mr. Herman F. Menke, who is setting up a program of research and teaching at Washington State College. Menke is working on the pollen and nectar plants of the state.

We visited Oregon State College at Corvallis, but unfortunately were not able to meet Prof. H. A. Scullen due to the fact that we were behind our schedule. Dr. Scullen has conducted various investigations on bees, including a study of the pollen and nectar plants of the state.

At the University of California at Davis we met Dr. J. E. Eckert. Several research projects on beekeeping are being conducted by Drs. Eckert and Laidlaw. Dr. Eckert is conducting investigations on the relation of agricultural chemicals to beekeeping, on the control of AFB by chemical means, and a survey of the pollen and nectar plants of California.

Dr. H. H. Laidlaw is conducting research on the genetics of the honey bee, improvement of instruments and techniques for artificial insemination of queens, and improvement of stock through controlled breeding.

Our final visit was at the Intermountain Bee Culture Laboratory in Laramie, Wyoming. Here we met Drs. J. H. Sturtevant and C. E. Burnside (who recently passed away) and John Hitchcock. The research conducted at present at

(Continued on page 259)

Honey Bees and Other Pollinating Insects

Lack of Pollination a Serious Threat to Seed Production

[From 1949 Report of the Chief of the Bureau of Entomology and Plant Quarantine, Washington, D. C.]

Seed production in this country is threatened with a serious lack of insect pollinators. Wild pollinating insects have virtually disappeared in many localities following the use of the new insecticides or other modern agricultural practices that destroy their nesting places. Honey bees could easily be substituted for wild bees, but an alarming number of beekeepers are giving up their colonies because the price they receive for their honey is below the cost of production. They have little incentive to provide bees for the benefit of legume-seed producers and other farmers in the pollination of crops. There is already an acute shortage of legume seeds, particularly of the improved varieties. Unless the producers of these crops realize their dependence on bees and make arrangements to recompense beekeepers for the services of their colonies, the shortage can be expected to continue.

Location	Alsike clover	White clover
1	1,945	2,420 and 968 (2 fields)
2	3,194 and 1,936 (2 fields)	3,582
3	1,774	2,742

Honey Bees Prodigiously Active as Clover Pollinators

The value of honey bees in the pollination of clovers was demonstrated in Ohio by counts of their visits to the flowers. On alsike clover there were 380 million bee visits on a normal stand of 450 million florets per acre, mammoth red clover had 152 million visits on a stand of 300 million florets, and red clover 312 million visits on 216 million florets per acre. Honey bees on alsike clover visited 27 florets, on mammoth red clover 8 florets, and on red clover 10.5 florets per minute.

On 4 plots of red clover that were caged to exclude pollinating insects the average number of seeds per head ranged from 0.02 to 0.19, whereas on 15 plots on which honey bees were caged for pollinating purposes the range was 45.4 to 70.3 seeds per head.

Crops Compete for Bees

The pollination problem is complicated by a severe competition between various crops for the visits of bees. The competition between fields of alsike and white clover close to each other and between fields of the same clover is illustrated by the following numbers of bees per acre estimated from any one count:

A field of red clover had but 1,210 bees per acre when competing against Hubam sweet clover, which had 21,780 bees, while heartsease nearby had 13,068 bees per acre.

The importance of plant competition in determining whether or not colonies of bees brought into a field will gather pollen from a given plant was indicated in an experiment in which all plant competitors of alfalfa were removed. Roadside weeds within a mile of five colonies were sprayed with 2,4-D. Although alfalfa was abundant, gumweed was the principal pollen collected by the bees before the spraying and continued to be even though the gumweed plants nearby had been killed. After the spraying the bees evidently extended their flight range to find new sources of gumweed rather than collect pollen from the alfalfa that was closer to the hives.

Bees may gather pollen readily from a kind of plant grown in one locality but not when it is grown in another locality. In Utah, for example, honey bees gathered little pollen from alfalfa grown in Cache Valley but collected it readily from alfalfa at Delta. Partial chemical analyses showed the ash content of pollen from Delta to be more than twice that of pollen from Cache Valley (2.50 versus 1.16 percent).

Of 65 species of wild bees that have been taken on alfalfa in other parts of the country, only 27 appear to contribute in an important degree to the pollination of alfalfa in Utah, although all 65 species have been collected in this state or

XUM

in Southern Idaho. **Halictus ligatus** Say was found on alfalfa in Utah for the first time in 1948.

Different species of wild bees seem to favor different crops. In Oregon the species of bumblebees that visited red clover were not found on Ladino clover. The bumblebees common on red clover belonged to only 4 or 5 species out of about 30 found in the state. In one area surrounded by rocky hills, bumblebees were as abundant as honey bees on Ladino clover, whereas in more intensely cultivated areas no bumblebees were found on this clover.

Wild Pollinating Insects Reared in Artificial Nests

Although the importance of the bumblebee and other wild pollinating insects has long been recognized, little has been done to rear and use them under controlled conditions. Experiments with bumblebees have given the most promise thus far. Of 54 artificial nests set out to attract bumblebee queens, 18 were found and accepted by young queens. In six of the accepted nests, males and new queens were produced. Colonies of **Bombus huntii** Greene were the largest. In the most populous of these 455 worker and male cells plus 156 queen cells were found at the end of the season.

Shade, concealment, and good drainage appear to be favorable factors for nest location. It is not necessary to place artificial nests underground, even for species that usually nest there. Attempts to induce **Megachile** bees to nest in holes drilled in wooden slabs were unsuccessful, as were attempts to transplant **Nomia melanderi** Ckll. into an artificial soil environment.

Hybrid Queens Distributed for Testing

Now that the artificial insemination of honey bee queens is proving satisfactory, beekeepers are showing much interest in the possibility of having hybrid bees that will prove as valuable to them as hybrid corn has proved to corn growers. This interest was greatly stimulated during the year when the Bureau, in cooperation with the Honey Bee Improvement Cooperative Association, began rearing and distributing hybrid queens for testing purposes. About 1,200 queens representing crosses of selected lines were distributed to beekeepers in various parts of the country. The program for 1949 called for the distribution of about 2,500 queens, to be furnished in lots of not less than 25 to any one beekeeper at a price above the market and with the provision that the Government be furnished certain reports of their performance. Such queens are being reared and mated naturally at an isolated mating station on Kelley's Island in Lake Erie.

New Insecticides Kill Only Field Bees

The bees that actually visit the dusted field are the only members of a honey bee colony that are affected by certain new insecticides applied for the control of insect pests. In studies to determine the effect of some of the new insecticides when applied for insect control, the only bees killed were those visiting the field within two days after the application. Parathion killed 40 percent of the visitors, DDT 28 percent, and chlordane 23 percent. Toxaphene killed only 8 and 2 percent in the two tests.

Two-thirds of the bees killed by parathion died in the apiary, whereas two-thirds of the deaths from chlordane and most of those from DDT and toxaphene occurred in the field.

A decrease in the number of bees visiting an alfalfa field was noted after the use of DDT, chlordane, and parathion. Mortality accounted largely for this decrease in fields dusted with chlordane or parathion, but where DDT was used a slow repellency seemed to exist which limited the number of deaths by reducing the number of visitors to the field.

Bees poisoned by chlordane or benzene hexachloride became sluggish and quiet with occasional spasms, similar to their normal response to low temperatures. In contrast, bees poisoned by DDT showed characteristic immediate tremors and greatly increased activity followed by paralysis. Death from DDT came more quickly than from the other two insecticides.

The lethal contact dosage of DDT per bee was found to be about 30 to 48 micrograms and that of chlordane about 6 to 10 micrograms.

In cage tests with different concentrations of DDT the mortality depended on the amount of DDT

present per bee. A decline in mortality was observed when the temperature was above 80 degrees F., the temperature range tested being 74.5 to 85 degrees. There seemed to be some tendency for the mortality to decline also with the humidity, in the range 61 to 92.5 percent, although this was not clearly established.

Spraying colonies with chlordane did not kill all the bees. In one test, while a red clover field in bloom was being treated for grasshopper control, chlordane was sprayed freely over the hives of three small colonies. Some bees were on the outside of the hive at the time. Nearly all of the bees were affected and many died, but the colonies survived in a weakened condition. Two bumblees collected in the treated area and caged on the day after the spraying died within 3 days, but a third lived more than 17 days. Caged solitary bees died the day after they were collected.

Nomia melanderi, a wild bee pollinator of alfalfa, was found to be affected by DDT applied while alfalfa was in bloom. A 3-percent dust was applied early in the morning at 20 pounds per acre. More than half the female bees nesting in the area visited the alfalfa on the same day. Although the dust seemed to be moderately repellent for a few hours, more than 2 percent of the bees nesting in sample areas were found dead at their nest entrances and about 15 percent of the nests became inactive, apparently as a result of the treatment. Spraying or dusting for insect control while crops are in bloom should be avoided wherever possible. If necessary to save the crop, insecticides should be applied at a time of day when the bees are inactive.

Honey Bees Bred for Resistance to American Foulbrood

The progeny of two of the lines of honey bees showing marked resistance to American foulbrood in 1947 were 100 percent resistant to this disease in 1948. One line, however, showed considerable lack of colony strength. This line had also been entirely resistant in 1947; the other had been 86 percent resistant, although all infected colonies had recovered by the end of the season. This is the twelfth season that these two lines have been bred and tested in successive generations. Another line that had been tested similarly and showed 100 percent resistance in 1947 had become so weakened, apparently by inbreeding, that tests with it were discontinued in 1948.

Sulfathiazole for Treating American Foulbrood in Experimental Stage

Six colonies infected experimentally with American foulbrood in 1946, and treated with sulfathiazole fed in sugar syrup in 1946 and 1947, remained healthy in 1948 until July 21, when a slight recurrence of the disease was noted in two of them.

Plastic Package-Bee Containers Withstand Shipping Tests

Six experimental transcontinental shipments of package bees in the new plastic containers mentioned in last year's report were made from Davis, California, to Beltsville, Maryland, in cooperation with the United Air Lines. Two of the shipments made the return trip to Davis. All the bees shipped with food in the containers survived well. One such package crossed the continent three times with but 5 percent mortality. A special food consisting of a sugar-syrup-agar jelly was suspended in a cloth bag. Some bees were shipped without food, but they died. A few of the containers were damaged. These plastic containers are smaller, lighter, and probably longer-lasting than the containers of wood and screening now in use, but thus far they have been more costly to assemble and crate and less convenient to handle, particularly to remove hitchhiking bees.

"But, darling, you said I shouldn't BUY a new hat!"

In Beekeeping, Out, and In Again

By C. D. Cannon

One day while walking with my youngest son we discovered a bee tree. For a number of years after this find we hunted bees with only fair success. Bees don't fly in a straight line in this hilly country but are more likely to go around a point of a hill than to go over it, or follow a valley until near home and then turn off abruptly. There are lots of wild bees and they survive and thrive.

In the fall of 1946 I found a copy of a bee magazine in a local barber shop and began to wonder if I could not produce honey easier than to hunt it. My son liked the idea so on New Year's of 1947 we looked over the remains of some old bee hives then stored at my brother's farm, and brought home a complete hive and two supers. We built the hive body up to standard height and cut a rabbet across each end and fitted with standard frames. The supers were rabbeted, so they were fitted with half-depth extracting frames. We wired the frames and put in foundation, then painted the outside of all parts with aluminum. As a last and final step, we ordered a three-pound package of bees with a queen from the South.

The day of arrival was a Sunday in mid-April when we were out of town and the local express agent phoned every friend and neighbor I have to get rid of those bees. There was a small hole in one corner of the cage which allowed the bees to escape one at a time, and they had the whole express crew in a fit. Monday morning I took them home, mostly in the cage, but some outside, fed them, and set them in the attic.

The weather was cold so we set the hive in front of the attic window. I put the open cage in front of the hive and when the bees started to go in I released the queen on top of the frames and let her run down to meet them. Then, for the first and only time, I heard a queen "zeep" a greeting to her bees. The only source of food was dandelions, so we fed them all they would take of sugar and water. They started off well and in a week had some brood and were storing our syrup in the comb along the edges of the frames.

As soon as it was warm and there were plenty of flowers we moved the bees to the flat roof of an outside building. Everything went well and soon after putting them outside, young bees were coming out to fly on warm days. Soon after that we noticed some excitement around the hive one Saturday and it appeared to be a case of robbing. I stopped the entrance down and all was well. About a week later the weather became hot and I again opened the entrance to about four inches. A few days later my son reported that he thought our bees were being robbed again. When I arrived home from work the robbery was completed.

Our bees had completed four frames of comb and there was nearly one full frame of capped brood left to die. The uncapped brood was all destroyed. We were "in" and "out" in five or six weeks. My son had become very interested in the bees and felt badly about our loss.

I made a few inquiries about getting a swarm nearby without success, but in mid-July I had a little luck. The evening shift at the factory had just started work when one of the men came to the office and said he thought a swarm of bees was settling back of the factory. I went out and saw only a few stray bees but soon spotted a fair swarm on a little tree. I wet them good and when I was through work I hurried home, ate my supper, and went back with the hive.

Every man who dared leave his place looked out the windows and marvelled that I dared to go near with only a smoker. I gently bent the tree limb down to the hive and drove them in with a little smoke. We were "in" again.

Those bees really went to work. In a few weeks they had the comb cleaned and the remainder of the foundation drawn out and all the frames in use. We bought another hive body complete and installed it. By mid-September there was some surplus in the super and we had it extracted. As there was a

little honey left in and on the empty comb, I set the entire super back on the hive so the bees could clean it out, but instead they moved into the super and would not get out.

In November we set the hive inside an old chicken house without windows, and wrapped it in heavy paper. The early part of the winter was mild and the bees were all right, but in late January 1948 winter came in earnest and bitter cold weather lasted into March. When milder weather came there were no active bees, so we opened the hive. All were dead. There were four quarts of dead bees and at least 25 pounds of good honey in the hive. They were clustered part in each hive body, but there was no honey inside the cluster.

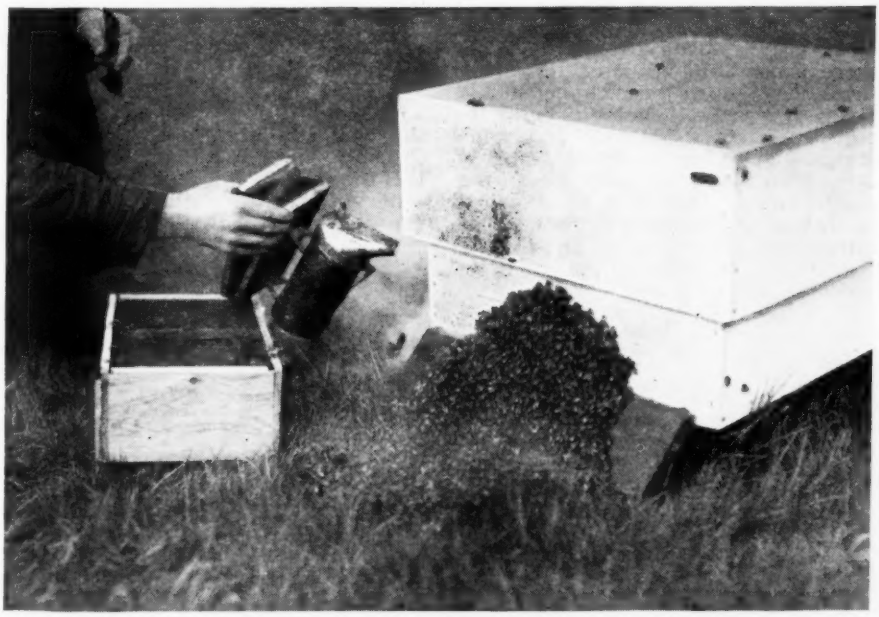
We were "out" of beekeeping again and a little discouraged but not ready to give up. Immediately we ordered two three-pound packages of bees, each from a different source, and arranged two hives with half the left-over honey in each. We also got frames and several more half-depth supers.

The first package arrived on the last Tuesday in March in fine shape, and we installed them by setting the open package in an empty hive body below the body and frames they were to occupy. The queen was released on top of the frames as soon as the first stray bees came up. On the third day we removed the cage and empty body. This package was everything that could possibly be expected of a small colony and soon was crowding its quarters.

The second package arrived just one week later but there were quite a lot of dead bees in the package and they did not seem at all peppy. They were installed in the same manner as the others but for a number of days there were groups of several bees all over and around the hive just resting or moving feebly about. I believe from the descriptions that I have read that they had Nosema, and within a week at least one-third of the original package had died. They did start brood and finally got going in a fair way.

Except for the fact that both lots arrived in packages they had very little in common. The first lot were docile and energetic and had but two ideas—to raise brood and store lots of honey. They filled two half-depth supers with light honey, then started in on the dark and finished

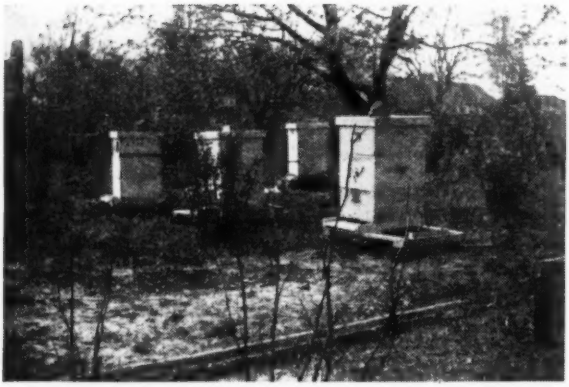
(Continued on page 255)



I drove the bees into the hive with only a little smoke

Four Years with Bees

By S. M. A.



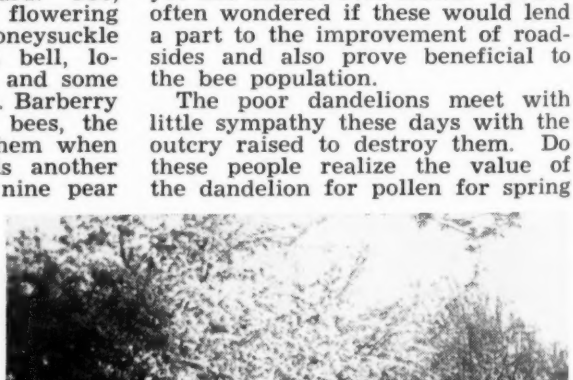
S. M. A.'s bee yard just after the first examination in May.

Spring examination began last year on May 5, a little earlier than usual. The picture of the apiary was taken just as the work was finished. One I call my pepper-pot hive. As soon as operations start, the bees begin peppering and keep it up until all is finished but they rarely sting. It is a case where the bark is worse than the bite. They produce well each year so I can well afford to be patient with them.

A high concrete wall, buildings, and trees on the outside give ample protection from wind and make an ideal setting for a bee yard. Too, there is an abundance of flowering shrubbery such as honeysuckle bushes, forsythia, golden bell, locust trees, mountain ash, and some others that bloom in June. Barberry is a great favorite with bees, the hedge being alive with them when in bloom. Gooseberry is another attraction. The row of nine pear trees look like snow drifts when they burst into bloom and to walk beneath them when they are so is an inspiring experience. To one who loves the beautiful in nature and appreciates its significance it is almost a prayer of praise to the Creator. At present they depict a phase of His gracious generosity, borne down as they are by an abundance of fruit that makes them look like weeping willows.

The birds plant honeysuckle bushes all over the place and it seems a waste to throw them out yet one cannot over-crowd. I have often wondered if these would lend a part to the improvement of roadsides and also prove beneficial to the bee population.

The poor dandelions meet with little sympathy these days with the outcry raised to destroy them. Do these people realize the value of the dandelion for pollen for spring



Pear trees look like snow drifts when they burst into bloom.

brood rearing? Its leaves make blood-purifying greens, both cooked and fresh. Its leaves dried and powdered go to make up an activator for compost heaps. Drying and decaying on the ground, it gives back to the soil its share of revivifying humus. Cannot a reasonable cooperative be established between beekeepers and the general public in this regard?

Bees are a real necessity for fruit and seed production. Orchard production has doubled here since the bees have made their home with us.

I use as little spray as possible but all the compost that I can get. This is a give-away but one that I am proud of. Yes, I am an Organic Gardener and I spell it with capital letters. But I am a beekeeper, too, and the two are A-1 cooperative. It is only because organic materials are scarce that I use any spray at all. I look forward to the day when I can dispense with all sprays for the trees and plants will be strong enough to hold their own against insects because the soil in which they grow is fed nature's way and is alive with soil-building bacteria and beneficial earthworms.

Poison sprays have become such an integral part of modern orcharding that they may seem indispensable. I wonder if that is true. What I do know is that bees are indispensable and sprays are a threat to their existence. Oh, I know spray men are careful for the most part about such sprays as the calix and ten-day sprays but what about the lowly flowers that grow beneath the trees and supply the bees with nectar and pollen after the trees have ceased their bloom? Are bee diseases more prevalent in parts of the country where chemicals are used as fertilizer or where they are not so used and where sprays are practically nil?

(To be continued)

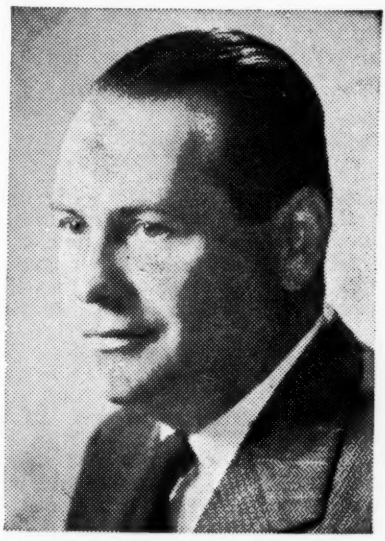
Dr. William Coggshall Appointed to New Post

Dr. William L. Coggshall has been appointed assistant professor of apiculture in the Department of Entomology at Cornell University.

A native of Central New York, he is well known to New York State beekeepers and has the distinction of being a member of the third generation of his family to work with bees. His grandfather was one of the pioneers in commercial beekeeping, having started in 1865.

After helping to organize the Finger Lakes Honey Producers Cooperative at Groton, New York, in 1939, Dr. Coggshall served six years as its first president. In 1940 he began devoting full time to honey production, and in addition to New York State he has engaged in migratory beekeeping in South Carolina and Florida. Following several years in commercial beekeeping he returned to Cornell, completing his Ph. D. degree in 1949.

During his undergraduate days at Cornell he was a member of the freshman and varsity wrestling teams and was assistant coach in the 1936 and 1938 seasons. After graduation in 1935 Coggshall served during the summer as deputy apiary inspector with the Department of Agriculture and Markets.



WILLIAM COGGSHALL

In his new position, Dr. Coggshall's efforts will be in extension, teaching, and research relating to honey bees and other pollination insects beneficial to fruit and legume seed production.

Quick and Easy

By Mrs. Benj. Nielsen

This quick lemon cream pie is a honey. — Photo courtesy Kellogg Co.

April showers bring forth the May flowers that will begin to furnish a bit of Nature's sweet. And if the contents of your honey jar are as low as those of most beekeepers around this time of year these showers will indeed be welcome.

With spring cleaning and gardening in the offing, in addition to regular "must" routine, we need recipes that are quick and easy to prepare—a minimum of work with a maximum of results. So here they are — and do try these luscious, crunchy, subtly flavored honey toppings on your old favorite pies and cakes.

Good eating to you!

Quick Lemon Cream Pie

Four cups corn flakes, ¼ cup butter, and 2 tablespoons honey. One and ⅓ cups sweetened condensed milk, 2 tablespoons grated lemon rind, ½ cup lemon juice, 2 egg whites, ⅛ teaspoon salt, and ¼ cup honey.

Crush corn flakes into fine crumbs. Melt butter in pie pan; add honey and crumbs and mix thoroughly. Reserve one tablespoon crumb mixture. Press remaining mixture evenly and firmly around sides and bottom of pie pan. Bake in slow oven, 325 degrees F., for 10 minutes. Cool before adding filling.

Blend condensed milk, lemon rind, and juice, stirring until mixture thickens. Pour into crumb pie shell. Beat egg whites until foamy, add salt and honey gradually, and continue beating until stiff. Spread on top of pie and sprinkle with remaining crumbs. Chill thoroughly. Yield: One 8-inch pie.

Honey Happies

Three-fourths cup brown sugar, 3 tablespoons honey, 1 tablespoon butter, and 2 cups corn flakes.

Mix brown sugar and honey in small saucepan. Cook over moderate heat, stirring constantly until sugar is dissolved and mixture bubbles. Stir in butter. Pour over corn flakes which have been measured into buttered bowl. Mix well. Drop by teaspoonfuls onto waxed paper. Let stand until cool. Yield: 20 1½-inch candies.

Honey Bars

One cup honey, ½ cup thick sweet cream, 5 cups oven-popped rice cereal, 1 tablespoon cocoa, and 1 teaspoon vanilla.

Cook honey, cream, and cocoa to hard boil stage (255 degree F.). Remove from heat and add vanilla. Pour over cereal which has been placed in greased bowl. Mix well. Press mixture down into a greased 9 x 9-inch pan, cool, and cut into squares. Yield: 64 squares, 1¼ inches in diameter.

Honey Crumb Topping

One and ½ cups corn flakes, ¼ cup chopped nutmeats, 2 tablespoons brown sugar, 1 tablespoon melted butter, and 2 tablespoons honey.

Crush corn flakes into fine crumbs; mix with nutmeats, brown sugar, and butter. Toast in oven until lightly browned. While cake is still hot, brush with warm honey and sprinkle with crumb mixture.

Aurora, Nebraska.

It Can't Happen to You – But It May

By A. Gullible Apiarist

In this country we are proud of our freedoms. We uphold those things that the majority say do not infringe upon the just rights of others. Being afforded with a great deal of opportunity for the expression of individual initiative, we are allowed to excel in almost anything we undertake. Not only does this apply to great achievements such as the pacifist nature of Christ, but to the more base things of life which rob virtue instead of instilling it. Unfortunately, gracious treatment of all allows the less developed individuals opportunity to degrade. This is not an argument for more law and less grace, but an argument that we have advanced far above those who must be forced to be good. What I wish to point out is that many, like myself, take the orderly administration of justice for granted, never supposing that we will be the rare individual who must pay the penalty for relaxed vigilance. It is necessary to give some well-earned advice to fellow beekeepers who have been selling their honey on a delivered or consignment basis. What I have to say will apply to all, no matter how confident anyone is that he will be paid for his honey.

First of all, you should know that sending your honey with the freight paid gives the unscrupulous buyer every opportunity to defraud. He may complain of the quality of the honey, though that was not done in my case. He may never pay for it, for your case is weaker than you think when it comes to collecting the debt. He may claim he never bought it at all, and delay payment on the ground that it is not sold. When forced to give an account of the honey, he may admit it was sold and seek a lower price than that agreed upon. Possibly there are other dodges that I do not know about, but the outcome is the same. He stalls off payment until you have spent a great deal on lawyers and until you are obliged to sue him.

Your troubles have just begun. You cannot afford to sue him, even for a large amount, because of lawyers' fees and court charges. Worse yet, you dare not bring suit for fear that by some hook or crook of the law (or his defense) you will be sued for false accusation. You see, your sending goods freight paid can be misconstrued as sending on consignment, a trade term legally binding upon you to accept a commission arrangement, no matter what you thought.

Now, if you think this couldn't happen to you and that I am the unlucky one, you are mistaken. I got off with exhorbitant (shall we say) lawyers' fees. It is your turn next. These culprits are becoming more crafty all the time, and there it no stopping them. They take any amount from a couple hundred dollars to five thousand or more. "But", you ask, "can't the FBI or Postal Inspectors do something?" It would save a lot of money, but retard individual initiative, if justice were so simple to get. The Government doesn't know you from Adam. For all they know you may be the real culprit in disguise as an injured citizen. They must wait for years, big unwieldy machine, to collect enough evidence. In the meantime the millions go teeming along unaware of your private troubles, and your case is forgotten or weakened by time and details until the thief has fled. Rarely, a new ruling is given in court, and law becomes more effective. With the increase of law comes the oppression of red tape and socialized interference in private initiative. To be forewarned is to be forearmed. Why not put a value on your honey that will look all right with FOB? Which is better for you in the long run, 9 cents FOB or 10½ cents delivered? Would not 8½ cents FOB, though it looks cheap, be better than 10c delivered?

Our Cover Picture

The close-up photo of the narcissus blossoms was taken by Bob Milo of Rochester, New York. The narcissus is attractive to bees mostly as a source of pollen.

Second Glances

By C. M. Isaacson

The pollination service of the honey bee is rapidly being regarded by scientists and government officials as the most important of our industry's contributions. In fact, it was upon this basis that our price support measure was obtained (page 148). Mr. Merrell's article is therefore all the more timely (page 137). Yes, bees do produce fruit, legume seed, and vegetable crops—on down a long list of products the whole country needs and uses. The problems of pollination service on a large scale are well outlined from his own experience. The need of adequate help and transportation facilities is stressed, as well as the necessity for strong and healthy colonies. An important point also is the mention of the relation of the type of orchard planting (as regards provision for cross pollination) to the number of bees needed. All in all, this article will be well worth a second reading to any beekeepers in, or planning to be in, this phase of our business.

Package bees can be profitable if certain requirements have been fulfilled. Granted that packages of good stock with good queens have been obtained at the right time for your requirements and honey flow, the two big points remaining are proper hiving (in a well-constructed hive, naturally) and making sure that a constant supply of food is available. The many other points mentioned by Editor Deyell should also be kept in mind—that combs of honey and pollen are best as food but if sugar syrup must be fed that it must be fed liberally and pollen substitute be supplied if none is available naturally; that only hives known to be free of disease be used; and that the critical period of development is the third week after installation (page 141).

Production costs in Australia must be considerably lower than here—possibly due to lower labor costs or higher average crops. Why this observation? The statement that a stabilized price of six to ten cents has proved quite payable is one that could scarcely have been made here the past years (page 145). And just a word as to the strength of newly emerged virgin queens. Naturally, it depends on the length of time they have been held in the cell. I have seen them wobbly as any worker just emerged, and I have seen them fly immediately after crawling from the cell. Those swarming cells mentioned had most likely been prevented from emerging considerably past the normal time.

Individual initiative can be replaced by government programs only if we are willing to pay the price —the progress possible under a free society (page 146). This development in thought logically follows the well put remarks by S. R. Smith quoted on pages 146 to 148. And the many details that must be met before any support program for honey gets under way are summarized well in the talk. Give it more than one second glance, and let us all hope that the program finally put forth is simple, both for now and the following periods, as Mr. Smith says. Most of all, let us remember that we want to walk without a crutch again—we must so walk!

Much valuable information must have been presented during the National meeting in Mississippi. One observation which stands out at the present time is that by Dr. S. W. Edgecombe that 75 percent of the country's people know little about pollination, even including some entomologists! We surely have a wide open field in which to spread the real value of the honey bee in this respect (page 152).

Uniform state regulations governing interstate shipments of bees are surely needed (page 155). And may I add—actual enforcement of such regulations. Too many of the present ones are disregarded upon occasion — by inspectors and private parties alike.

The eagerness of a beginning beekeeper is often a thing to behold! The Editor's mention of the boy who almost cried when his bees could not be secured immediately brings memories of how anxiously I awaited delivery of my first two packages. They were several days late, and I'm afraid not too much charity towards the shipper was present at the moment. Bees do take a hold on one (page 156).

From a Backlot Beekeeper

By Gus Dreseler, Milwaukee, Wisconsin

We have two nice winter pear trees about 15 years old. The trees bloom every spring, but so far we have had only a few pears from them.

Everybody handed out some advice, but nothing seemed to help. One day we found a magazine in which someone wrote a story about bees and fruit trees.

One colony of bees and a good queen were ordered from a southern bee firm. I had plenty of time to study about bees, so when they came I was sure everything would be all right.

I put the box of bees in the car and started out to our summer house on the shore of Lake Michigan. A few reminders of what to do and the new home and the right place for it was selected. Another good look into this box of buzzing bees and off came the screen—slowly. The queen in the little cage looked fine and was set nearby.

After I shook all the bees into their nice new home, I reached for the queen cage to place it, and it slipped out of my hand down between the bees and the bees all over it. Now what?

By this time I felt a few bees all up and down my legs for I had failed to tie a string around my pants. It didn't take long before the new beekeeper and the bees became excited. So, dear me, I got the queen out plus a few nice stings.

Everything went fine after that. More reading was done for the next eight days. The bees released the queen and had drawn two frames, and seemed to like the new home but I'm sure they didn't like the new beekeeper.

One noon in the first week of July my wife called me. The bees had swarmed and settled on a lower branch of the evergreen tree nearby. Now what? No extra hive on hand!

Rush into the car—to the nearest bee supply dealer. We rushed back. I nailed everything together and hived the swarm. Now we had two colonies, when we really wanted only one for our trees.

A few days later we had another swarm, so out with the books again. I put a newspaper over the top of the parent hive and shook the new swarm in, put a box with the frames on top, and closed it. By the next day a war was going on and I could not figure out why. I had taken the queen away before I shook the bees in. Later I found out that a very weak colony was all that was left, but plenty of honey.

Winter came and we were without an extractor, so we left the honey in for the winter. Both hives had good windbreaks in our evergreens and came through very well. Through the winter months some more reading was done in order to get a little smarter. By this time I liked the bees so much I wanted more, and many a time my wife called down to the basement to know when I would finish nailing.

One more colony was ordered that spring, and as often as I inspected the hives I could tell I did fine and pulled many a boner, but learned a little more every time. That year we had a good year and plenty of honey, but still no pears.

The following winter brought lots of snow, so much that I could not see the hives. After a little digging I found that there was plenty of clearance around each hive for circulation.

Now for the sad story:

A neighbor noticed bees in an old squirrel house high in a tree. So he hived the bees and had lots of comb honey, and a fine colony in our way of thinking. But one of the other neighbors complained of finding the damp wash in the basket soiled and even a nice jar of honey did not help. To avoid trouble he gave the bees to me.

With the next inspection the bee inspector found AFB. Had I only known! The inspector showed me what AFB looks like, but to be honest I still cannot tell it unless it is at a very bad stage.

With tears in my eyes I turned away and told the inspector to do what he must—and I was so proud of my bees.

I learned so much and still know so little. The newspapers are full of information, but never print much about our wonderful bee world.

XUM

A Talk to Beekeepers

By M. J. Deyell

April is one of the most interesting months of the year, especially here in the North. As a matter of fact, this may be said of any month. However, the month of April in this latitude makes it possible for beekeepers to open hives and examine the bees, provided, of course, the weather is sufficiently warm.

When the sun and the south wind drive away the snow, and warm days prevail for a time, vegetation springs into life almost over night, as if by magic.

The First Early Pollen

In this vicinity the bees get their first pollen from the pussy willow. This is a valuable pollen plant and more of it should be planted throughout the country. Bees collect enormous loads of it to be used for brood rearing. One wonders at times how a bee with two large pellets of pollen on its hind legs can fly from the plant where the pollen is collected into the hive.

According to experimental work done by Todd in 1941, ten average sized pollen loads are required to produce one worker bee and one pound of pollen is necessary to produce one pound of bees. It is obvious that the importance of a good pollen supply during all of the bee year cannot be over-emphasized.

Six Colonies Examined January 25

We had a warm day on January 25, the mercury reaching almost 70. We could not resist the temptation to examine a few colonies in two outapiaries. Naturally, we examined colonies that showed a good flying force of bees. We were not surprised to find brood in the three center combs, patches of brood six or seven inches by four or five inches, oval in shape.

There were a few emerging bees which indicated that the queens had started to lay about the first of the year. We intended to visit the colonies in another month, February 25, but the weather at that time was quite cold.

The colonies examined were unusually populous. Conditions last fall in this area were favorable for bees to store an ample amount of honey and pollen. We had a very heavy aster honey flow and this was followed by warm weather

M. J. Deyell

which gave the bees a chance to ripen the honey properly.

Well Balanced Colonies

When bees are properly cared for and permitted to have an ample amount of honey, instead of being compelled to run on starvation rations, the colonies are likely to be populous, provided a good supply of pollen is available.

Some beekeepers say they do not believe in early brood rearing. They probably mean by this that they do not wish to encourage brood rearing too early in the spring but, of course, strong colonies of bees will start brood rearing when conditions are right, regardless of what their owners may say or think.

Referring again to the strong colonies we examined, the young bees that started emerging from combs in January will be ready to take the place of older bees that begin to die off early in the spring. If no young bees were born prior to the time the older bees begin to die off, the population of the hives would be reduced considerably and consequently these colonies might not be in a condition to take full advantage of minor honey flows that usually come in the spring when dandelions, fruits, and other blooms appear.

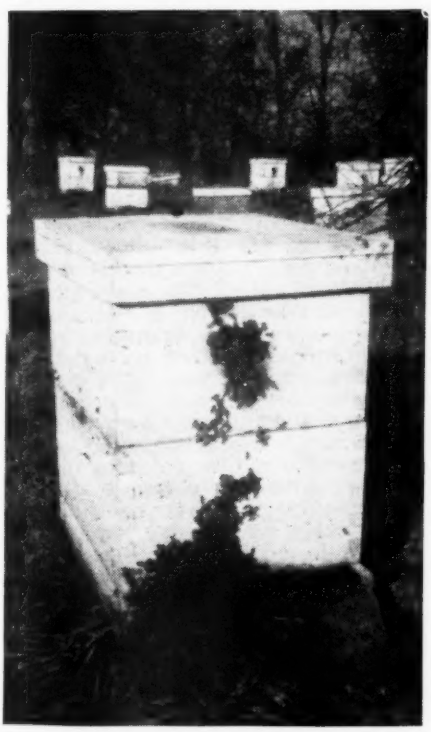
Hive Manipulation During April

Referring back to preceding talks, you will realize that we are now considering the "HOW" of beekeeping and that is a long story.

I have been taken to task more than once by beekeepers over the

world for not telling them exactly what manipulations to perform each month throughout the season. If you stop to think about it you will realize that this would be impossible. For example, here in Eastern Ohio beekeeping conditions are not the same as they are in Western Ohio throughout the season. As a matter of fact, in Southern Ohio the season is a week or ten days in advance of what it is up here in the North near Lake Erie. Beekeepers in southern states, especially those along the south border, are now extracting honey or getting ready to take off the first surplus honey of the season. The major honey flows in Florida, Southern Alabama, Louisiana, and Texas come two months earlier than they do in Northern Ohio.

When we think of other parts of the world,.as for example Australia, New Zealand, and South Africa, which are away down under, south of the equator, beekeepers in those countries are now approaching winter.



Bees clustered on the front of a hive containing a very populous colony on January 25, 1950—a warm day.

Readers of these talks live in practically all countries of the world and consequently my job is to emphasize the principles of beekeeping, suggesting some methods of manipulating hives, leaving it to the readers in different parts of the world to apply these beekeeping principles to conditions that prevail in their respective localities.

I have said this before and will likely say it again in the future—that **honey bees need only three** things. First, some **protection** against the elements, which is furnished by giving them hives to live in; second, **comb space** which is necessary for brood rearing and the storage of honey and pollen; third, **food,** which means an ample amount of honey and pollen at all times of the year. If we can remember these three requirements and see to it that they are present at all times in our apiary management, we are more likely to succeed in beekeeping than we are if we omit or forget one or more of them.

For example, if we fail to give our bees adequate protection against the elements, we may lose some colonies during a very severe winter here in the North. If we are too skimpy on providing stores for bees in the fall we may lose some colonies from starvation during the winter and early spring months. It has been said that more bees are lost because of starvation than from any other single cause. Many beekeepers remove too much surplus honey.

The old bee masters have tried to tell us that there should never be less than 15 pounds of sealed honey in each hive at any time, especially during the spring months when an abundance of honey is needed for brood rearing. Fifteen pounds of honey would be the equivalent of three filled standard combs. When the amount of honey in the hive gets below 15 pounds the queen is likely to curtail her egg laying and this in turn reduces the population of the hive, which in turn reduces the crop of surplus honey secured because the maximum number of bees are not present at the time the honey is available.

Bees are not credited with having intelligence, but they apparently do have instinct which tells them that when nectar and pollen are not plentiful and the amount of honey

in the hive is gradually disappearing they should not and cannot continue brood rearing in normal fashion. Even though the queen did lay a normal number of eggs per day, the bees in the colony would be unable to care for the eggs and feed the young larvae if they did not have the necessary food.

During some spring seasons the weather is so unfavorable for bee flight and nectar secretion, as well as the collection of pollen, that the amount of stores in the hives dwindles very rapidly. When we realize that approximately one comb of honey is required to produce one comb of brood, and that one pound of pollen is required to produce one pound of bees, we begin to realize how necessary it is to have all colonies supplied with an ample amount of food, especially during the spring months when maximum brood rearing is so essential.

How and When to Examine Colonies

The beginner wants to know just how to open hives and examine combs of brood, what to look for, and what to do in order to bring all colonies up to par as far as this is possible.

Hives should be opened during the warmest part of the day while the bees are flying well. One needs a bee smoker, a bee veil, and a hive tool. The smoker should be well lighted before putting on the veil, especially if it is a cotton veil which is easily burned by flames from a lighted smoker.

Never stand directly in front of the hive when bees are flying. If the hive has an outer cover remove it, then insert the hive tool under one corner of the inner cover and blow some smoke through the small opening. Wait a few seconds, remove the inner cover, then apply some more smoke, over the top of the frames, but not too much.

When all of the combs in the brood chamber are to be examined, it is customary to remove the first outside frame nearest to you. Shove the hive tool down between the end bars of the frame and the hive wall, then pry the frames over toward the opposite side. Next, separate the nearest frame from the adjacent one and carefully remove it. The queen is not likely to be on this outside comb, but occasionally she may be. This comb should be stood on end at the front corner of the hive in such a position that it does not obstruct the entrance of the hive where the bees are flying in and out. The reason for placing this comb at the front of the hive instead of at the back is that should the queen be on this comb and decide to leave the comb and crawl on the ground, and she sometimes will, she can and usually does gain entrance to the hive. If the comb were placed at the back of the hive the queen might be lost in the grass and would not likely find the entrance to the hive.

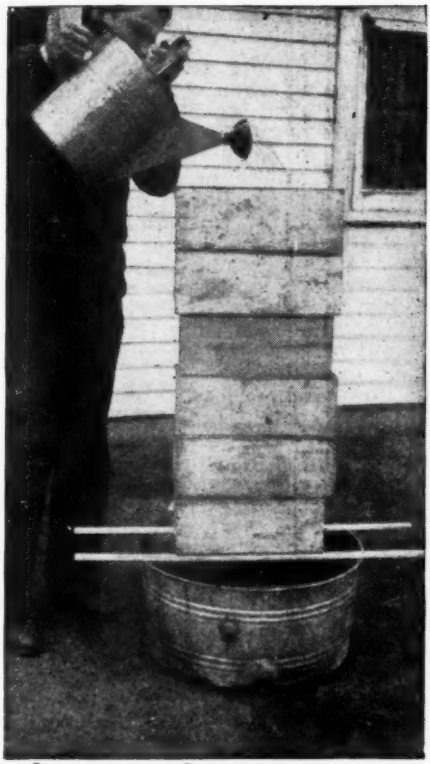
Do not make any quick moves. After examining the comb and standing it in front of the hive, the next comb should be removed and examined, then placed back in the hive at the nearest side. The remaining combs should be examined in a like manner and then placed back in the hive tight up against the other frames.

Before placing the first comb removed back into the hive, the frames in the hive should be pushed over, all at once, to the farthest side to make room for the first frame removed. This prevents killing bees. When it is necessary to examine the bottom brood chamber of a double-story hive, the upper chamber, after being examined, should be placed criss-cross on the inverted outer cover at the back of the hive. This procedure avoids killing bees that are clustered on the bottoms of the frames. If this upper brood chamber were placed on the upper smooth surface of the cover many bees would be killed.

The lower brood chamber is examined in like manner, then the upper chamber is placed back on the hive where it belongs. We are assuming that the double brood chamber is used. There are a few beekeepers who winter colonies in single-story hives. We feel that it is an advantage to winter each colony in a two-story hive. The upper story or brood chamber is in reality a food chamber, but becomes a brood chamber in the spring as the bees use up the honey in this upper chamber and convert it into brood. The empty combs that become available are then used by the queen for brood rearing.

Conditions within the Hive

In the latitude of Northern Ohio colonies should have brood in from



Piling the packages of bees on top of a tub and pouring the warm syrup from a sprinkling can is the best and most economical way of feeding the bees.

four to six combs during the middle of April. If the season is early more brood will be found. Farther South, colonies have reached full strength and in some states surplus honey has been stored.

The combs near the side of the brood chamber should contain a considerable amount of sealed honey. Combs in the center of the brood chamber should contain eggs and brood in all stages, sealed and unsealed, as well as honey in the upper portions of the combs.

Cells adjacent to the brood will contain pollen of many colors. Balls of pollen may be seen on the legs of worker bees. This pollen is placed in the cells of the comb by the bees to be used later as larval food. Fresh nectar may be seen glistening in the cells of the combs.

As colonies are examined, it is comparatively easy to estimate the amount of sealed honey in each hive, considering the fact that a filled standard comb contains approximately five pounds of honey.

Three Kinds of Cells

A comb should consist mainly of worker cells which are approximately one-fifth of an inch in diameter. Drone cells are about one-quarter of an inch in diameter and are usually found in the lower portion of the comb and easily detected because they project somewhat beyond the depth of the worker cells and look like bullets projecting from cartridges. Queen cells appear before a swarm issues and are usually built along the lower edge of the comb. They are easily recognized because instead of being horizontal, as are worker and drone cells, they are nearly vertical and resemble peanut shells in shape.

A Further Word Regarding Package Bees

Considerable space in the March Gleanings was devoted to the hiving of package bees. We wish there might be a standard method of shipping packages, of caging queens in the packages, and a more standard method of feeding the packages and putting them into the hives.

As already stated last month, it is necessary to feed bees sugar syrup before putting them into hives. This makes the bees quiet and easy to handle. A few years ago we ran onto a convenient method of feeding packages after they are received from the express company and before they are put into hives. The accompanying picture shows packages of bees piled flatwise over a tub on top of two sticks laid across the top of the tub. The sugar syrup is made of equal parts granulated sugar and water. The warm syrup should be poured on the top screen of the top package in order that it may run down through all of the packages. No syrup is wasted. More than one application of syrup is necessary for bees to become well filled before they are put into the hives.

When the weather is cool it is necessary to feed the bees warm syrup. After taking all of the syrup they can hold, the bees should be dumped into the hive from the package after four or five frames are temporarily removed from the

(Continued on page 244)

Asked and Answered

Ladino Clover as a Honey Plant

Question: I would like to know more about Ladino clover as a bee pasture before I move my bees to it. A man has 75 acres of young seeding about on the state line between Indiana and Ohio.—F. R. Hollis, Ind.

Answer: Regarding Ladino clover as a honey plant, there have been various reports from over the country, some quite favorable, others not so favorable. It is possible that as time goes on, as it becomes acclimated Ladino will be a more reliable source of nectar than at present. Its reliability may depend upon soil conditions as well as atmospheric conditions. We have had a small apiary near Ladino clover during the past few years. The bees have been seen working it vigorously but the amount of surplus obtained was somewhat disappointing. We hope to get further reports from over the country in the near future.

Dividing Strong Colonies and Introducing Packages and Queens

Question: We have always made our increase by installing packages. Generally when we get in a shipment of 50 packages two extra queens are sent along. We always divide a strong wintered-over colony, setting off one-half of the brood and bees and old queen to one side, and the other half of brood and bees on the parent stand, making sure the queen has been removed. We hang queen cages with attendant bees between combs, and cross our fingers. Ten days later the new queen is either dead in the cage or has been released and the bees have killed her. We have had very poor luck. We would like to divide 100 colonies that are good by May first and introduce queens. Can you see anything wrong with this method? Perhaps we should leave the hive to be requeened, queenless for 24 hours, or would removing the attendant bees from the queen cage help? One season we had 10 queens sent to us and seven either disappeared or were found dead in cages. We have consequently relied on packages to increase our outfit. I would appreciate your experience on this subject.—John L. Tideswell, Nebraska.

Answer: If you would leave the queen with the bees on the parent stand and introduce the new queen and package to the bees in the hive set aside, you would, in our opinion, have better success. The bees on the new stand would be mostly young bees because the old bees would drift back to the parent stand. Generally speaking, young bees will accept a queen more readily than will old bees. If you do this dividing when very little honey is coming in, it is well to make sure that there is an abundance of honey in the hive on the new stand because the young bees in this hive may not be old enough to go to the fields. In other words, most of the bees are hive bees and not "fielders". If this coming season you divide strong colonies on a large scale, giving the queenless divisions new queens, our suggestion is that you permit the queenless divisions to stand queenless about five days until they have begun to build queen cells, then on the 5th or 6th day destroy all of these queen cells, being sure that none is missed. Then introduce the queens. You can readily see that these queenless colonies do not then have any young larvae from which to rear more queens, consequently they are more likely to accept the new queens. If you can get rid of the attendant bees that are sent with the queens in mailing cages, you will find that the bees will accept these queens more readily than they will if the attendants are left in the cages with the queens when introduced.

Swarms vs. Colonies for Storing Surplus

Question: My latest bee book says that "only the strongest colonies with a well-balanced bee population should be used to produce either section honey or bulk comb honey". Now we have a number of hives that live along happy and contented with apparently a well balanced population. They are in good condition but produce very little surplus honey. With me a new swarm will store lots more honey in proportion to their number of bees than an old colony. Yet a new swarm is decidedly out of balance in housework, baby sitting, and field work. Is it not better to endeavor to have an abnormally large field force during the honey flow than to have just a well-balanced population?—Thos. A. James, Colo.

Answer: During a relatively short, intensive honey flow, a large swarm hived at the beginning of such a flow is likely to put up a good crop of surplus honey. The reason is that the swarm contains a large percentage of field bees of the honey-gathering age. Furthermore, there being no brood to feed for a time, at least, after the bees are hived, a higher percentage of bees can be released for field work

than would be the case if the hive contained the normal amount of brood. Generally speaking, it can be said that strong colonies of bees with a balanced population—colonies that have the incentive to store honey—will gather a good crop if it is available. Such colonies will do better work during a long drawn-out honey flow than swarms hived at the beginning of the flow. During a long honey flow there comes a time when some of the bees in a swarm begin to die off and they are not replaced with young bees. It takes three weeks to complete a cycle of brood and during the first three weeks the population of a hive containing a swarm decreases rather than increases.

Tung Tree Pollination

Question: Are honey bees needed for the pollination of tung trees?—John L. Wilmot, Md.

Answer: Dr. Harley L. Crane, Bureau of Plant Industry, Soils and Agriculture Engineering, is the Department's authority on tung trees. He says that in this country pollination of tung is largely effected by bees. Dr. Crane says that caged trees (to exclude insects) did not set fruit. Tung pollen is too heavy for wind pollination and moreover the grains are sticky. The flowers are attractive, have a pleasant odor, and secrete some nectar which make them interesting to bees.

Male and pistillate flowers are born separately but on the same tree. Tung trees are considered self-fertile. Dr. Crane believes that most tung fruits are produced from pollen born by the parent tree and transferred from flower to flower by insect pollinators.

If further detailed information is desired we would suggest that you correspond directly with Dr. Crane.

We have found in this country that when crops are grown in large blocks, a pollination problem is apt to arise notwithstanding an otherwise abundance of native pollinating insects in the locality. A large acreage blossoming at one time puts too much of a task on the native insects.

Bees learning to fly apparently do not go far from the hive on the first few flights; consequently, an unusually good job of pollination is done when the hives are close to the trees. The hives should be scattered throughout a grove, field, or orchard or distributed in small groups. The bees should not be located to one side or some distance away if the best pollination is to be done.—Jas. I. Hambleton, Division of Bee Culture.

Feeding Dry Granulated Sugar

Question: Have you ever had experience feeding dry granulated sugar by placing it on an inner cover over the bee hive instead of using the feeder pail and syrup?—Reuben David, Iowa.

Answer: Yes, we have had some experience feeding granulated sugar to bees, spreading it on the inner cover with the hole in the center left open. This appears to work quite well. If the bees need the sugar they will take it; if not, they will leave it alone. Two years ago, during the month of May when the road to one of our apiaries was too muddy and soft to drive a car on, we carried in a part of a bag of sugar and fed 30 hives of bees in less than a half-hour. We emptied the sugar into a large metal container with a handle, then used a 5-pound honey pail to dip the sugar out of the container and spread it on each inner cover. It is possible to get between three and four pounds of granulated sugar on each inner cover. One advantage in feeding granulated suger is that there is no danger of getting the bees stirred up to robbing. Obviously, this type of feeding is more suitable for warm weather than for cool weather. The bees need water to mix with the sugar and during warm weather they can easily go out and get the moisture.

How to Paint Hive Containing Bees

Question: A lot of my large supers need to be painted. Would it be practical to paint them as they stand in the stack? Would not the bees stick to the paint? Would it not be possible, and better, on a warm day, to transfer the frames into a newly painted super, removing the old supers to the shop for painting? Or would this disturb the bees too much? What is the general practice? — Wm. Frew Long, Ohio.

Answer: It is possible to paint hives with their supers during the summer months when they are occupied by bees. The alighting board of the hive and the hive entrance should be painted late in the evening after the bees are all home. Some beemen use a brush, others spray the paint on the hives. In either case, painting can be done quite conveniently when the bees are in the hives. That is the way we do it here at Medina.

Editorials

Honey for Breakfast Week This special emphasis on honey for breakfast during the week of April 9 to 16 is sponsored by the American Honey Institute of Madison, Wisconsin. It presents a marvelous opportunity for beekeepers over the country to advertise their product and to take full advantage of the help the American Honey Institute is giving in supplying suitable printed matter at a nominal cost.

Dairy organizations will use honey in various ways in different parts of the country in demonstrations. Gerber's Baby Food Bulletin announces Honey for Breakfast Week by saying that a little on the toddler's cereal or on hot cereals for grown-ups is a fine way to start the day.

Other food companies are making a special effort to promote honey during that week. For example, New England Poultry and Egg Association is to promote honey on the radio and Heinz will send pictures and releases on honey rolls to 214 papers across the country. Pillsbury will feature hot rolls and pancake mix with honey.

Some people seem to carry the idea that honey is a cold weather food. Not necessarily, because it is a carbohydrate, and energy food, and energy is needed during the spring, summer, and fall months, as well as during winter. As a matter of fact, more honey is sold during the warm months than was sold a number of years ago.

Our suggestion is that during Honey for Breakfast Week beekeepers who have honey to sell, make a special effort to move it, either from their apiary houses or through grocery stores, using appropriate printed matter furnished by the American Honey Institute—honey recipes and display cards. Let's make this a Honey of a breakfast week.

* * * * *

Package Bee and Queen Shipments in 1949 We note from a report of March 2, 1950, from the U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, D. C., that southern shippers report that last year 84 percent of the shipments were made by railway express, 12 percent by truck, 3 percent by parcel post, and less than 1 percent by air. The total amount of package bees—767,800 in 1949—is 34 percent less than in 1948.

Of the total pounds of bees shipped in 1949 approximately 46 percent were moved in two-pound packages and 45 percent in three-pound packages, and the remainder in four and five pound packages. The number of queens shipped in 1949 was 676,600 as compared with 858,800 in 1948.

It appears that the increase in express rates for bees will cause shippers to investigate other possibilities of moving bees—by truck or parcel post. The bee and queen shippers face a difficult situation with package prices down, production costs still high, and the rather heavy consumption of stores the past winter due to mild weather which necessitates feeding early in the spring prior to shipping time.

It seems possible, however, that the demand for packages of bees and queens will strengthen as the season advances, especially if the demand for honey increases because of efforts now being put forth in advertising and promotional work.

* * * * *

Be Sure You're Right —Then Go Ahead This is easier said than done. Just how do we know we are doing the right thing, not only in managing bees and marketing honey, but in other matters pertaining to life?

In any event, with respect to beekeeping we should take time to formulate a rather definite program at the beginning of the season, one that incorporates our best thinking as well as the opinions of beekeeping authorities.

If a honey flow does not materialize because of adverse weather conditions, we are not blamed for we have done our part.

However, if in our apiary management we violate some of the fundamental principles of beekeeping and thus fail to secure the maximum crop we have only ourselves to blame.

The old slogan "Plan your work

and work your plan" is a good one to use in beekeeping. All too many beekeepers approach the season with a sort of hazy idea of what they are going to do and why. Perhaps a number of swarms issue at the beginning of the major honey flow before some beekeepers actually wake up to the fact that they should have had supers on the hives before the swarms issued in order to avoid congestion within the hives, which is said to be the main cause of swarming.

In the matter of visiting outapiaries some distance from the home plant, it is quite essential that trips to these yards be scheduled intelligently so that the necessary equipment for the outyards may be taken along at the right time. All duplication of effort should be avoided so far as possible. Never run empty trucks to an outapiary, especially at the beginning of the season.

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Destroy Injurious Insects, Yet Protect the Beneficial Ones

[The following was received from J. A. Munro, Chairman, Department of Agricultural Entomology, NDAC Agricultural Experiment Station, Fargo, North Dakota.—Ed.]

With the rapidly increasing interest in bees for pollination of legume seed crops, it would seem timely to remind growers that pollination is only one of the important links in the chain of production. Other factors are the control of injurious insects and the production of vigorous plant growth. If any of these conditions are neglected the prospects for a seed crop are poor.

Of the various pests, the lygus bugs are probably the greatest limiting factor in alfalfa seed production. These small, somewhat inconspicuous bugs are present in the fields long before the plants come into bloom; that is, well before the pollinating insects begin to visit the plants for pollen and nectar. It is then, before the plants come into bloom, that the insecticide should be applied to destroy the infestation, and yet not endanger the bees and other beneficial insects. When for some valid reason the treatment must be made after blossoming has begun, application of the insecticides after sundown will lessen the danger to the pollinators.

Of the various insecticides tested by the North Dakota Experiment Station, including DDT, chlordane, and toxaphene, the DDT sprayed on the fields at the rate of two pounds of actual toxicant per acre has given best control of the lygus bugs. Such treatment resulted in a yield of 140 pounds of alfalfa seed per acre, as contrasted with a yield of 18 pounds per acre in an adjoining section of the field which remained untreated. Equally satisfactory results have been obtained in the control of these bugs by the dusting of DDT provided about 25 percent more DDT is used and the application is made in fairly calm weather.

Before making the application, the grower should determine to what extent the bugs may be present. This he can do to best advantage by making a few sweeps of his field, at well distributed places, with a standard 12-inch diameter insect "sweep" or collecting net. We use a special fine mesh sweep net for the purpose, obtained from Ward's Natural Science Establishment, Inc., Rochester, New York (sent postpaid for $3.15).

The net should be swung so that it sweeps the tops of the plants. If such sweeping results in capturing one bug per sweep, then it justifies the application of DDT.

Where grasshoppers are also present the additional use of chlordane or toxaphene, at the customary rate is also to be recommended. Either of these insecticides is better for grasshopper control and may be combined with the DDT when necessary to do an all-around job of controlling the lygus bugs as well as grasshoppers, crickets, and various other troublesome pests.

It is most important to observe timely application which will result in destroying the injurious species and yet protect the beneficial ones. If this is borne in mind, then the result will be better legume seed production and the least danger to the pollinating insects.

* * * * *

Bureau of Investigation Performs Outstanding Service for Beekeeping

On Easter Sunday morning, 1948, 158 colonies of bees were stolen from the apiary of Howard M. Myers located near New Bern, North Carolina. Diligent search was immediately begun by the State Bureau of Investigation agents

and the State Highway Patrol of Raleigh and authorities in several other states. Later an agent of the Federal Bureau of Investigation was on the case. The untiring efforts of the agents of the State Bureau of Investigation were finally rewarded when the bees were found in the apiaries of P. G. Craddock and Clyde Motley in January 1950. Identification was simplified by the fact that the hives had been painted blue. The blue paint was easily discovered under a coat of gray which had been applied after the bees were stolen. This identification was so obvious that the men confessed and assisted in collecting the colonies from 20 different apiaries in three counties in North Carolina where they had mixed them among their own bees.

At the trial in New Bern, North Carolina, on February 14, 1950, persons of high standing testified to the previous good character of these men and thereby eased the sentences which the judge might have made far more severe than were imposed. Craddock was handed a sentence of three to five years in prison and a fine of $250.00 and court costs while Motley was sentenced to prison for two to three years. Both men were placed on probation for the duration of their sentences. The judge also considered that Craddock had voluntarily made restitution to Myers to the sum of $3000.00.

Wide search had been made for these bees in North Carolina and surrounding states by airplane and automobile which cost heavily in time and cash. Final success was the result of ready identification of the hives. Many colonies are stolen each year that have not been recovered because bee hives are commonly made alike and painted white, making positive identification impossible.

Bob Davis has recently joined his father-in-law, Howard Myers, in commercial beekeeping. Their initials M&D can be found burned deeply into the wood of all their hives and other wooden equipment. They use an instrument recently placed on the market. Thieves are likely to think twice before stealing branded hives.

Walter A. Anderson, Chief, State Bureau of Investigation, Raleigh, North Carolina, invites beekeepers in southeastern states to report to him cases of bees stolen in the past few years. He might be able to give valuable assistance in finding them.

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Cellar Wintering in Northern Canada The report of R. M. Pugh of S a skatchewan in North, East, West and South for March indicates an increasing number of colonies being wintered in cellars throughout the province. The winters there are very cold, often times with below-zero temperatures continuing for weeks. This makes outdoor wintering very difficult. However, some beekeepers in Manitoba, the adjoining province, are wintering outdoors in locations which are reasonably well sheltered from the prevailing winter winds.

The apparent reason for more bees being wintered in the cellar than formerly is that there has been an advance in express rates on bees going into Canada. Furthermore, the demand for honey throughout the Dominion has slackened somewhat during recent months. These two factors have forced beekeepers to reduce operating expenses in order to make a living margin of profit.

Some years ago when package bees cost less than they do at present, and express rates on bees were considerably lower than they are today, a number of beekeepers in the North killed off their bees late in the fall, leaving some honey in each brood chamber, then stocked the hives with package bees the following spring. This appeared to be a rather sensible procedure. However, as already stated, the trend at present is towards wintering bees instead of killing them off in the fall. Possibly some beekeepers think that "a bird in hand is worth two in the bush".

In fairness to past and present practices related to maintaining colonies in the North, it should be said that there are some advantages as well as disadvantages on both sides of the question, which we shall not go into at this time. It seems probable, however, that many northern beekeepers will continue to buy packages from the South, mainly because they are then assured of young queens and bees and they get away from the problem of wintering bees in an extremely cold climate.

From North, East, West and South

SOUTHERN CALIFORNIA, Mar. 5

Weather: February was quite mild and beautiful weather for the tourists. But the beekeepers are not too happy in many locations as there has not been enough rain. Los Angeles County and some other districts had heavy rains the first part of the month but the counties inland are short and prospects don't look too good. However, the season is still early enough that Southern California may get some more good rains.

Market: The market has been a slow one of late. Producers who still have honey are holding, hoping that the government price support will be of financial benefit to them.

Miscellaneous: Plants in general are in good condition although the lack of moisture in some parts is holding back the growth. The black sage—one of our earliest honey producers—seems to be very late in showing signs of blooming. There are enough plants of various kinds blossoming to give the bees plenty of pollen and a little nectar. In warmer places the oranges are starting to come into bloom but in most citrus districts the buds are just beginning to show.

The beekeepers are all very busy these days getting everything lined up for the spring flow of honey. And as usual most of them are quite optimistic about the crop. The bees are building up and should be ready when the oranges are all out in full force. Many more bees than usual are being moved into the southern counties—most of them to be here for the orange flow. Is there danger of having too many bees for the orange groves?

Perhaps the most exciting news for the beekeepers of Southern California is the great interest being shown by alfalfa seed producers in the pollination of the blossoms. Farmers are offering as much as $3.50 per colony to have bees moved into their seed alfalfa acreage. Since they have found out that they can produce from three to four times as much seed per acre with plenty of bees on the alfalfa, they are clamoring to have the busy insects working for them. In addition to the cash offer, some alfalfa growers are giving a percentage of the seed. So the beekeepers in the western states feel that the future of the industry is excellent. This situation should partially answer the editorial in the January issue of Gleanings "What of the Future of Beekeeping?"—L. L. Andrews, Corona, California.

NORTHERN CALIFORNIA, Mar. 1

Weather: Several good rains fell during the past month in Northern California valleys and rather heavy snows in the higher elevations. The precipitation for the month in this locality was 4.3 inches, which brought the total for the year just two inches short of the normal of 12.52. The soil at this date is still too wet for cultivation in many places but the lighter soils are being cultivated and planted to grain, beets, and various other crops. The north winds have not been as frequent as in past years and occasional fogs tend to retard evaporation from the surface soil. Several days of warm weather have caused the elms, almonds, and apricots to burst into bloom, causing a rapid increase in brood rearing. Temperature conditions have been favorable for frequent bee flights.

Condition of Colonies: Well-fed colonies with young queens came through winter in excellent condition and in this locality have brood in from four to eight frames at this time (March 1). The bees will cover from seven to fifteen combs, making good colonies for the pollination of deciduous fruit trees.

Plant Conditions: There has been sufficient moisture to penetrate deeply and the condition of the early plants is excellent. The cold winter has caused the fruit trees to

burst into bloom ahead of their time in some instances. Apricots are ahead of almonds in the same sections, a situation which does not happen very often in California. The thistles are sprouting and are more numerous than at this time last year. One cannot forecast honey flows too far in advance these days for chemical weed control measures are cutting into the available pasturage for bees. Manzanita will be short this year, especially at the lower levels. The increased acreage of alfalfa and other legumes might make up to some extent for the loss of natural pasturage for bees if it were not for the policy of using from three to seven colonies of bees per acre to provide an adequate force of pollinators. While this concentration of bees produces phenomenal seed crops, the amount of honey produced per colony is reduced to a point where the colonies are barely self supporting. Sometimes they do not even make winter stores. As a result, beekeepers cannot afford to go into the seed areas unless they receive a rental to equal the expense of moving and the equivalent amount of honey they would make elsewhere. Much of the legume acreage, however, will be the first year stand and this does not support as many colonies or yield as much seed as older plantings. Some seed growers are planning to go into the beekeeping business in order to be assured of having sufficient bees when they need them and, they hope, at a lower cost than they will have to pay for rented colonies. This is quite a transition in practice for many of the legume seed growers were tomato growers a few years ago when their applications of calcium arsenate killed so many colonies. Bees were an unmitigated nuisance for them then but now they are a necessity. This is a desirable change and comes at a time when the switch from the arsenicals to DDT, toxaphene, and other less toxic chemicals has resulted in greater safety for bees in agricultural areas. Some of the seed growers may acquire beekeeping experience the hard way. It may be more costly to keep bees ten months of the year for two months of pollination services than to rent colonies from established beekeepers.

The Honey Market: The honey market is about the same as last month, rather quiet. Beekeepers who have honey on hand are generally holding to see what effect the price support will have. The California State Beekeepers' Association voted at its last convention to investigate the merits of a Honey Marketing Order for the promotion of honey sales. The committee met in Los Angeles last month and is scheduled to meet again in March. Since the committee consists of both producers, packers and processors, it will investigate the possibilities of improving the sale of California honey through a self-imposed assessment on each pound of honey produced or handled in California. The committee seemed to be of the opinion that it is necessary and urgent to do everything possible to increase the demand and sales for honey in order to move it to the user rather than to the Government as surplus. Many agricultural industries have profited by the services of a marketing order. Honey is in somewhat of a different situation than certain specialty crops, and the uncontrolled amount of honey imported for manufacturing and table use will reduce the over-all value of a Marketing Order unless a way is devised to make it pay a fair share of the assessments. However, if all beekeepers in every state would contribute a fraction of a cent per pound for advertising, sales promotion, and research into new uses for honey, and the handlers of honey a like amount, it is hard to see how there would be any surplus left. Honey is in plentiful supply at the present time and Leo Sawyer of Los Angeles suggests that it should be placed on the monthly list of Plentiful Foods issued by the Production and Marketing Administration, U.S.D.A. Honey is getting back on the "leader" list and is being offered at or below cost by some of the larger grocery stores. This has had the tendency to make the smaller containers in greater demand, for who would buy a two-pound jar when they can get five pounds for only a little more? Some of the packers are going in for better display cases and report that the policy is paying good dividends.—J. E. Eckert, University of California at Davis.

NORTH DAKOTA, March 7

Weather: Our North Dakota weather ran fairly true to form, with plenty of sub-zero temperatures in January and February, and a good blanket of snow to cover the ground. During the past few days, however, the snow has been disappearing rapidly as the result of the first spell of warm weather since winter started. Yesterday the temperature rose to 43 degrees locally, which is the highest recorded so far this winter. All this was too good to last. Today there is a severe blizzard, with winds of 50 miles or more per hour and visibility as well as temperature almost zero. Schools throughout this part of the country have been closed until the storm is over.

While the "warm" weather lasted, one of the local beekeepers reported that a few of his bees were in flight, only to fall in the snow a short way from the hives. He examined one of the hives to find everything satisfactory. He said there was a good supply of stores, brood on both sides of three combs, and a good force of bees, which he said would be typical of the rest of his hives. It will probably be at least another three weeks before the weather is mild enough to permit any extensive check-up on the over wintering colonies.

Miscellaneous: Farmers of this area expressed growing concern about the heavy damage caused by the sweet clover weevil and the decreasing acreage of this legume, at a recent meeting of the Northwest Farm Managers' Association held at Fargo. A few who had tried the plan of "delayed seeding", suggested some time ago by the North Dakota Experiment Station, reported that it had resulted in good stands of sweet clover—the only apparent reason being that the seedlings developed sufficiently late in the season to escape the weevils which are especially damaging during the spring season.

So far we have had very little success in protecting the early seedlings with insecticides, probably for the reason that the plants are not well enough established to withstand weevil damage. Once the plants are well rooted and fairly well established they are able to take a lot of punishment from the weevils and yet survive.

In a round table on various topics at the winter meeting of the North Dakota Beekeepers' Association the subject of pollen substitutes came up for discussion. It seemed from the concensus that, although it is only the occasional spring when there is a shortage of natural pollen stores, it is good practice for the beekeeper to provide the pollen substitute so the bees can have it if and when they need it. That is, provide the pollen substitute as an added insurance for brood rearing.

The Association also discussed the possibility of holding a summer meeting at some central location in the state. — J. A. Munro, Fargo, North Dakota.

TEXAS, March 4

Weather: The weather during February continued with mild temperature and rainfall which was generally below normal. Soil moisture in most areas remains adequate but in southern, western, and northwestern areas of the state rainfall is greatly needed.

Bees and Plants: Brood rearing began earlier than usually and with a succession of early spring flowers bees generally have gathered considerable pollen and some nectar. Queens are now laying heavily and most colonies are well advanced. In some of the most highly developed farming areas where early spring bee pasture is limited to roadsides, fence rows, and water courses, the early bloom is scarce. Many colonies are weak, brood rearing retarded, and the feeding of pollen substitute is necessary to build up the colonies. A good many colonies have been moved to the brush area in Southwest Texas in anticipation of an early flow from guajillo, Mexican persimmon, guayacan, catsclaw, and mesquite. Guajillo is in bloom

over most of its range with the peak expected soon. Prospects for a honey crop are favorable, provided late cold weather does not occur. In the Lower Rio Grande Valley the citrus is expected in full bloom in a few days, somewhat earlier than usual. The trees apparently have made remarkable recovery from frost damage of last year.

Market: Honey sales have been less active than in recent months. Practically all the better grades of honey are out of producers' hands. Packers have adequate stocks until the new crop is expected. A considerable supply of amber honey remains in producers' hands for which there is little demand.

Miscellaneous: Queen breeders are well along with stocking the mating yards. Queen shipments will get under way by the middle of March. Queens are in good demand but early orders for package bees are considerably below those of recent years, apparently as a result of the increase in express rates. Northern beekeepers likely plan to make increase from their own colonies with queens shipped from the South or haul package bees by truck.

On February 7 a joint meeting of beekeepers and vetch seed growers was held at Terrell, at the call of Reagan Brown, Agricultural Agent of Kaufman County, for the purpose of perfecting a program of bringing more bees to vetch fields for pollination. This is a highly-developed farming area where 35,000 acres are grown to vetch and a lesser acreage of sweet clover. The meeting was attended by well over 200 and splendid cooperation was shown by the farmers and beekeeppers in adopting a program of their mutual interest. Under the plan vetch fields are indicated on a detailed map with a coordinated placing of apiaries for the most effective distribution of bees. Provisions also were made for safeguarding bees from poisoning by insecticide applications for the control of insect pests. Speakers for the meeting included County Agricultural Agents, members of the Apicultural staff of A. & M. College, and workers of the Soil Conservation Service.

A local meeting was held by the San Antonio District Beekeepers' Association and also by the Lower Rio Grande Valley Beekeepers' Association on February 24.

We regret to report the passing of E. W. Cothran of Roxton. Mr. Cothran kept bees extensively in the blackland cotton area of Northwest Texas over a period of more than 60 years. He saw the transition of beekeeping from log gums and box hives to modern frame hives, and the introduction of sweet clover in Texas. He also served as apiary inspector in his county more than 30 years ago and operated an experimental yard for some years. Mr. Cothran remained fairly active until the infirmities of his advancing years forced him to retire.—A. H. Alex, College Station, Texas.

NEBRASKA, March 6

Weather: This state has had more subzero weather this year than last winter with all of its blizzards, drifts, and isolation. Temperatures of 26 to 34 degrees below zero have been recorded and what this will mean to some of our fruit trees, especially peach trees, remains to be seen. The weather, however, has been very dry and in the western part of the state dust-bowl days were observed on a small scale. It has been necessary to shovel snow only two or three times, our heaviest fall being about seven inches.

Condition of Bees: Though it is too early to have gone through any colonies, it is the opinion of this writer that the bees have come through the winter in good condition, provided they were left with ample stores of honey in the fall. The fall flow was good over most of the state. Smartweed bloomed profusely and the weather on the whole was favorable for the bees to work on this source. While most beekeepers are not too happy about a crop from smartweed, as it is strong-flavored and difficult to market, it does furnish good supplies for bees to winter on, permitting extraction of lighter, milder-flavored honey which finds a ready market at a good price.

Crop Prospects: The outlook for a good crop is bright provided we

receive good rains and the grasshopper situation can be held in check. There is considerable concern over the grasshopper threat.

Miscellaneous: Arthur Godfrey's dissertation on bees has caused widespread interest and comment. Reaching millions of listeners as this program does, it has been of great benefit to the beekeeping industry as a whole. This is particularly true in aiding beekeepers to find pasture for their bees.

The careless beekeeper is still having trouble with foulbrood and always will, in spite of all the so-called remedies which have been discovered. This writer has found over many many years of experience that the only cure for foulbrood is burning. This past winter one beekeeper of our acquaintance placed his faith in sulfa in a foulbrood territory, and as a consequence lost 119 of his 125 colonies, in addition to infecting a goodly number of his neighbor's bees.

We are still watching with grave concern the increasing and untimely use of sprays on fruits and legumes.

Too much emphasis cannot be made concerning the packaging of quality honey for table use. Bitter strong-flavored honey should be disposed of through bakery channels and only good pleasingly-flavored honey offered for table consumption. The public will pay a better price for a quality product it can be consistently sure of. — Benj. Nielsen, Aurora, Nebraska.

MANITOBA, March 1

I believe that nearly all of us know how to do better than we do. Inertia, procrastination, and tending our routine chores tends to keep us from stepping out of the rut and accomplishing many worthwhile projects in life.

Obviously the most worthwhile project for the beekeeping industry at the present time is to move several million extra pounds of honey into the mouths of the consuming public. The marketing of honey in all its forms and flavors is our vital problem. The piling up of surplus honey which does not find its way to the consumer is damming up the whole flow of activities connected with the beekeeping industry. Commercial beekeepers, hobbyists, research workers, supply dealers, honey packers, and even magazine editors all feel a frustration, a depression in connection with beekeeping and forboding of worse to come.

Many of the executives of beekeeping organizations have attacked the problem and given freely of their time, sleep, and energy to find solutions. Their efforts have rarely been widely appreciated by the industry at large but insofar as the leaders are concerned, who have tried to develop the necessary organizations for honey advertising, or those who have pursued the government on the controversial problem of floor price—these can certainly not be accused of inertia, procrastination, or leaving it to George. Right or wrong in their approach, they have tried to solve an immediate and urgent problem.

In spite of the admirable efforts of various leaders in the industry and probably because these leaders have been so valiantly trying to solve the difficulties, I cannot help feeling there is an extreme inertia and apathy on the part of the thousands of beekeepers throughout the United States and Canada as far as stepping out personally and doing something to increase honey sales and break this dam which is slowing down the whole industry.

Probably the development of packing plants has made some beekeepers think that selling is none of their concern any more. Others probably feel that floor prices will solve all problems.

The fact still remains that the size, importance, and prosperity of the honey industry depends upon the amount of honey that reaches the stomachs of the consumers, unless of course beekeepers are paid a floor price and the honey destroyed. This is a solution which appears to be the essence of futility.

There are somewhat over 30,000 beekeepers in Canada and many times that number in the United States. Among them are sufficient salesmen to move the surplus honey. The beekeepers are looking to the American Honey Institute, The American Beekeeping Federation,

and the Canadian Beekeepers' Council to solve their problems directly or through the Government. I believe that with some imaginative direction this now inert mass of honey salesmen could be moulded into a honey-selling group that would be supplementary to the paid advertising of the organizations and probably of greater value.

In order that this transition take place beekeepers will have to shake free of the illusion that someone else has taken over all the responsibility for honey sales. Just how consistent sales effort by thousands could be maintained is a problem but I have felt for some time that there are solutions. Considerable direction and some coordination would have to be provided again by the leaders of the major organizations. The mistake should not be made of assuming that Honey Week or some such project would make use of the masses of beekeepers. The more dramatic high pressure feats are always left to the leaders.

A more appropriate type of project to get the beekeepers working might be to designate a honey-selling month, say April or May 1950. Suggestions for action could emanate down from someone such as the presidents of the American Beekeeping Federation and the Canadian Beekeepers' Council to the beekeepers through their association presidents or secretaries and through the bee journals.

Projects could include direct contact with neighbors to sell or boost honey; placing of honey signs on cars, trucks, and honey houses; making or buying observation hives and placing them in the local stores; polishing up the honey house and wearing a white apron whether it is necessary or not when working around honey.

Many other suggestions could be forthcoming although I believe that direct contact with storekeepers and consumers is most desirable. A full month of persistent effort along this line by the many beekeepers who would respond would surely be of much value in moving honey and might be followed up by one day per week of special sales effort.

Many are worried but few are working. Many are willing but need direction and the spark to act.—E. C. Martin, Provincial Apiarist, Winnipeg, Manitoba.

WYOMING, March 9

Weather: As I write I hear "12 degrees above, continued cold, with occasional snow flurries" announced on the radio. Precipitation was below normal for both January and February, and much below normal snow cover was reported in the mountains, but at this date we still may get even more than the normal amount of moisture. A few mild days in the high 50's last week permitted some feeding to be done and a slant on what to expect in winter losses, which will probably be considerably heavier than a year ago, as bees were not as heavy in stores because of the lack of rain in late summer over most of Wyoming. There is nothing we can do about the weather.

Miscellaneous: There is one thing beekeepers in general could do a lot of, it costs nothing, but would accomplish much for the industry, and that is cooperation—get together—the Golden Rule—or call it anything you like, but consider your fellow beekeeper with less selfishness. There should be some way of reaching a just, common ground between the class of beekeepers who think nothing of moving in on the other fellow, with his theory that in a good season you can't overstock a territory, and the class who erect state laws under various guises and mean to wall off their territory with a dog-in-the-manger attitude. Both are lacking in the milk of human kindness, and intensify the age long struggle between the "haves" and the "have nots".

Market: Buyers hesitate to buy on a declining market. Honey is a good article and skill is required in producing and packing it, and it is deserving of a fair price which cannot be obtained by elbowing in with a lower price. The advice given on selling honey at the Missouri Apicultural Society and Beekeepers' Short Course last spring by L. F. Childers, co-discoverer of sulfa for the beekeeper's greatest plague, can most profitably be adhered to. Read Carl Kalthoff's article on this in January Gleanings, page 38. Locally honey continues

to move fairly well in spite of price differentials, and carload honey in many sections of the state has moved out at satisfactory prices. And I believe it is safe to say there is much less honey in the hands of producers than there was a year ago. But for lack of cooperation, Wyoming beekeepers are selling small packs of honey cheaper than any other state I see reporting. Prices on 5-pound pail retail are 69, 79, and 89 cents. Out-of-state honey is partially responsible for this and is featured by the chain stores.—Earl C. Reed, Ranchester, Wyoming.

NEW YORK, March 7

Market: We note that a normal honey consumption has been going on through the winter as shown by stocks moving from the grocers' shelves. There has been no real price slump, although some of the buyers have voiced their opinion that they want lower prices in large quantity lots.

Miscellaneous: There are many problems confronting the present-day beekeeper which he must overcome in order to stay in business. We all can produce honey but not everybody can present his product to the consumer in such a manner as to make the honey look appealing and mouth-watering. Most beekeepers have some trade coming directly to their honey houses and it is up to us all to keep the buildings and location as neat and clean as possible. Most of the beekeepers whom I have met have a good set-up and make a good impression on the honey-buying public. However, we must not get careless and leave hives laying around and throw out empty cans most anywhere or create an impression that we have no order. If we do these things, then our honey houses will become no better than a barn. If one can afford it, a nicely-painted building is good, but if that is not possible a clean well-ordered one will do.

One of the worst conditions is a building with bees flying around it so that the prospective customer figures he takes his life in his hands when he bolts through a swarm of bees at the door. (We could improve our own.) We should arrange it so as to present the best appearance possible. Dirty and mussy jobs should be kept out of sight. Large packers of food products run clean well-ordered places and no one is allowed to see otherwise. Since it has been found that disease germs can not live in honey, the Government has not been very strict with packing conditions. The person who puts out a poorly-flavored honey for the retail trade not only hurts his own business but the rest of the industry as well. I look at it this way—the extra time you take to heat and strain honey and have it in proper shape before drawing off pays for itself in extra sales. Advertise in your local papers, use attractive labels, and enclose or give some kind of honey booklet with each sale.

When the U. S. Government takes off the price support, what will happen then? Work, and make a market for your honey. In some ways the industry is 30 years behind the times. Awake, it is later than you think!—Roscoe F. Wixson, Dundee, New York.

ONTARIO, March 10

Ontario weather continues seasonable with light moderately cold weather and frequent snowfalls. At present there is a good snow covering on the ground. I like to see the ground covered with snow until around March 25. If the ground is bare during the middle and latter part of the month, freezing temperatures at night and daytime thawing cause severe damage to clovers, and can mean a difference between a good and poor crop of honey.

In spite of the exceedingly mild weather of January, bees seem to be in good condition at present. Strong colonies are brooding well. However, the next few weeks is the critical period and some colonies will probably dwindle before pollen and nectar become available in April.

Crop and Market Conditions:

Since my last notes were written some statistics have become available regarding crop and market conditions. The "Current Review of Agricultural Conditions in Canada", December 1949, reports that a considerable number of beekeepers went out of business in 1949. Colony numbers were also considerably below the 1948 level, and this, coupled with lower average yields, resulted in a crop of 31.2 million pounds, a decrease of one-third from that of 1948. In spite of the decline in production, stocks of honey were 2.2 million pounds heavier in 1949 than at the same date the previous year. There were 10 million pounds of honey in commercial channels on October 1, 1949. Notwithstanding the increase in visible stocks, on the basis of total production there were a least 14 million pounds less honey in the country than at the same time last year. With the prices at lower levels, indications are that the crop will be disposed of without difficulty.

It is expected that there will be a continuation of the downward trend in colonies in 1950, and at the rate of decline of the past three years it is estimated that there will be 470 thousand established colonies on farms on July 1, 1950. Based on the average yield for the past five years of 62 pounds per colony, a total crop of 29 million pounds in 1950 is to be expected.

Prices in the fall of 1949 were substantially lower than those of the previous season. The average farm price for the 1948 crop was 20.1 cents per pound as against 15 cents for the 1949 crop. It is believed that the prices for the 1950 crop will not go below the 1949 figure.

Miscellaneous: Ontario Beekeepers' Association is continuing its series of interviews with beekeepers on radio station CBL in cooperation with the CBC farm broadcast. These broadcasts take place at 12:30 noon the last Friday of each month, and are aimed at bringing practical information to beekeepers, and continually reminding farmers of the importance of bees in the production of farm crops. The farm broadcast is also listened to by a considerable number of city people, and it all adds up to considerable publicity for our product.

Recently gift packages of honey bearing the label of the Canadian Beekeepers' council were presented to all our members of Parliament, through the good offices of Claire Allen, Ontario representative on the Council, and H. O. White, our beekeeper M. P. from Glanworth, Ontario. It at least will serve to remind our legislators that Canada has a honey industry and that it is wide awake.—Allan T. Brown, Peterborough, Ontario.

Charles L. Duax, Illinois and Florida Beekeeper, Dies at Tampa

Charles L. Duax of Ashkum, Illinois, passed away at Tampa, Florida on February 28, 1950, after an illness of 11 days. Surviving are his wife, eight children, and ten grandchildren. Mr. Duax was a member of the National Beekeepers Association, Illinois and Florida Associations, Cook-Dupage County Association at Chicago, and Will-Grundy-Kendall County Associations. He was a member of Chicago Holy Name Society and of the Ashkum Business Men's Association.

He secured his first bees in 1910. In 1918 Mr. Duax served as President of the Chippewa Valley Beekeepers' Association of Wisconsin, and the year 1950 records 40 years of progressive commercial beekeeping, operating with the help of his sons 1500 colonies in Illinois and 300 in Florida, with a packing plant located at Ashkum, Illlinois, where three brands of honey are packed, the Duax Sweet Clover, Buzz-z Clover, and Orange Blossom.

He was known as "Bob White" for eight years, 1931-39, a whistling artist on the WLS radio and Barn Dance programs. For five years he served the State of Illinois as Chief Apiary Inspector and Supt. of Bee Culture at the Illinois State Fair.

Funeral services were held at St. Agnes Parish in Chicago with interment in Ashkum's Catholic Cemetery 70 miles west of Chicago, the summer and business home of the family. A host of relatives and friends joined his family in their bereavement.

American Honey Institute News Notes

By Harriett M. Grace, Director
Commercial State Bank Building
Madison 3, Wisconsin

To tie means "to bind" or "to establish a bond". And that is exactly what you do when you "tie-in" honey with another product. When you can persuade the grocers to whom you distribute your honey to display it with another product that is frequently associated with honey, you double his sales and therefore double the demand for yours.

You establish an additional bond between you, the producer, and the distributor, and you form a bond in the consumer's mind between honey and a related product.

If you have time before Honey for Breakfast Week, which begins Easter Sunday Morning, talk to your grocer about displaying honey near the cereals, citrus fruits, biscuits, or waffle and pancake mixes.

If you have already prepared for this important week in the life of every beekeeper, producer, and distributor, then concentrate **now** on National Baby Week, which will be held during the first week in May.

Baby stores, drug stores, and grocery stores will all be behind this well-known observance.

Honey can be successfully pushed at this time. Doctors have stated many times in the past that "Honey appears to have a special advantage in infant feeding, since it is easily obtained, is very palatable, and digestible".

Research has shown that honey has a definite beneficial influence upon retention of calcium by young infants. Doctors have also found that formulas containing milk, water, honey, cod liver oil, and orange juice are excellent for the baby during his first six months. After that time cereal and vegetables can frequently be added to the diet.

Discuss this with doctors in your community, and urge storekeepers to set up a display of honey near the baby foods section or alongside of the milk that is sold.

It will help the housewife and mother, the grocer, and you!

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The American Honey Institute has several suggestions to improve these displays once they are set up. Those that follow and many others can be found in the booklet "Let's Sell Honey" which is free to Institute members.

Place your displays at eye level. If they are too high the housewife in her rush through the aisle will not notice them. The same principle applies if they are set too far below the eye level. Keep honey where it can be seen instantly on a tour through the store.

Keep plenty of honey in the store. To build a proper display and to have your honey move, there must be enough containers of honey. A survey taken has shown that in many groceries only a half-dozen jars of honey can be found. If the consumer has to search that diligently, among the hundreds of products that cry for her attention, to find a jar of honey, she'll select something else instead.

To look and be effective, a honey display should have no fewer than 100 containers. This number should be carefully maintained to keep the supply moving.

Have a rotating display and feature honey packaged in two or three different ways. When honey rotates it gives the purchaser a chance to see its golden color and attracts her eye because it differs from other stationary products. Have several bottles of extracted honey, then some containers of comb honey, and perhaps chunk honey—a combination of extracted and comb honey. Above this display you might put one of the posters available from the American Honey Institute. There are two posters now in stock. The first, called "Honey Boy", pictures a sturdy lad with a huge jar of honey and reads "Take Home Some Honey". The second displays a wife looking sternly at her husband who's off to do the shopping and saying, "And don't forget the honey." The price per poster is 25 cents. They can be secured by writing to the American Honey Institute, Madison 3, Wisconsin.

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A well-known merchandising expert, in his 1950 message to grocers, forecast a year of guarded

(Continued on page 257)

Just News

The Western Missouri Beekeepers' Association will hold its April meeting on April 16, at 2:30 p.m. at 812 Westport Road, Kansas City, Missouri. The guest speaker will be Carl Kalthoff of Lexington, who will speak on building up the strength of colonies for an early honey flow, supering, and swarm control. Visitors are welcome. — Mrs. H. J. Schaffer, Secretary.

The Tazewell Beekeepers' Association of Illinois will hold a grand outdoor meeting on Sunday, May 14, at the home of the secretary, Joseph Jachman, 500 Swords Avenue, Peoria, right behind the Guardian Angel Home. A full and interesting program which includes movies has been prepared. Radio station WMBD with Farmer Bill will either broadcast the proceedings or will make a recording to be broadcast at a later date. A demonstration of the installation of package bees will be given. There will be election of officers at the meeting, registration will take place, and dues will be accepted. — Joseph Jachman, Secretary.

The Lackawanna County, Pennsylvania, Beekeepers' Association is planning its Annual Spring Round-up at Waverly Community House on April 11 at 8 p.m. W. W. Clark, Extension Apiarist, E. J. Anderson of State College, and Jesse Landenburger, County Agricultural Agent, will speak.

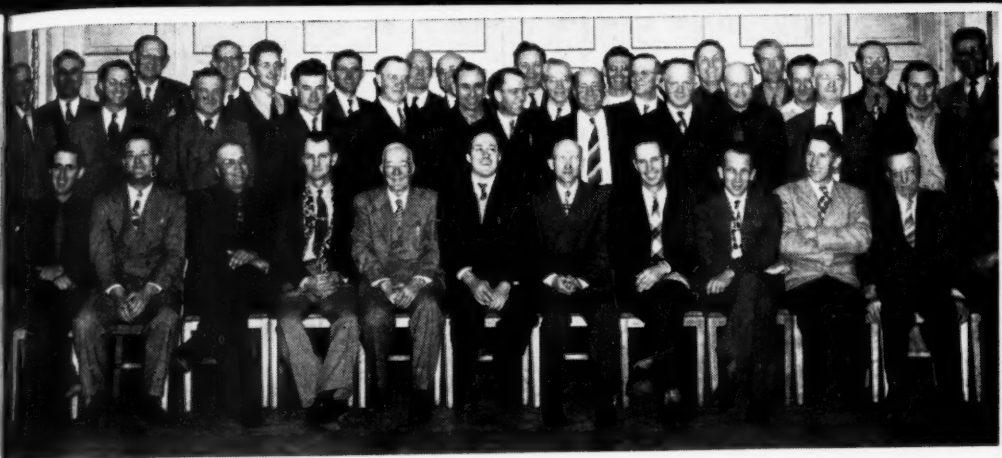
The Westchester County Beekeepers' Association will hold its regular monthly meeting at 2:30 p.m. on April 16 at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, New York. Following the meeting, instructive movies will be shown after which refreshments will be served. Visitors are welcome.—B. F. Miller, Publicity.

Another Extensive Honey Advertiesment.—Again a large merchandiser, B. Altman & Co., has spent a large sum of money advertising honey. In the March 8 New York Herald-Tribune appears almost a half-page offering 50 different kinds of honey, varying in price from $1 for two pounds of Iowa honey to $2.25 for one pound of heather honey from Scotland. There are honeys from 22 states and from 11 foreign countries. The famous Mt. Hymettus honey from Greece is listed —17 ounces for $2.15. There is Black Locust honey from Lake Como District, Italy; Horse Chestnut and Chinese milk vetch from Japan, one-pound jar for 95 cents. In many instances the producer's name is given. What large merchandiser will follow suit?

The Cuyahoga County Beekeepers' Association of Ohio held a successful meeting on February 12 in Cleveland. About 300 were present. Officers elected for the coming year are Dr. E. E. King, President; Vic Hamus, Vice-President; John Rafter, Sec.; and Henry Bittel, Treas.

The meeting of the **Missouri Apicultural Society** held on March 14 was particularly successful from the standpoint of attendance and talks. Dr. M. H. Haydak of Madison, Wisconsin, gave two talks which went over big. Dr. August P. Beilmann of the Missouri Botanical Gardens in St. Louis gave a fine talk on Missouri honey plants with Kodachrome pictures. Dr. A. E. Murneek of the Missouri Horticultural Department discussed fruit pollination from the horticulturist's standpoint. Dr. L. Haseman of the University of Missouri talked briefly on what might be expected in the way of future increase in beekeeping in Missouri, particularly small scale beekeeping. At the business meeting the following officers were elected for the coming year: President, W. F. Matthes, Pleasant Hill; Vice-President, H. J. Schaefer, Kansas City; Vice-President, Wilson Ratliff, Shelbina; Vice-President, August P. Beilmann, Gray Summit; Secretary, Virgil F. Burk, Columbia.

The April meeting of the **Cuyahoga County Beekeepers' Association** will be held on Sunday, April 16, at 2 p.m. This meeting will be in the Miles Avenue Church of Christ Hall at 9200 Miles Avenue, Cleveland, Ohio. There will be a round-table discussion about spring management of bees.



The Colorado State Beekeepers' Annual Meeting held in Denver in December was well attended and full of enthusiasm.—Photo by Ben Knutson, Alamosa, Colorado.

Another Dr. Farrar Prominent in the Beekeeping World

South Carolina in general, and Clemson College in particular, are to be congratulated on the acquisition of a new State Entomologist, Dr. M. D. Farrar, brother of Dr. C. L. Farrar of the Federal Bee Culture Laboratory at Madison, Wisconsin. Dr. Farrar assumed his new duties as Entomologist and head of the Department of Entomology and Zoology at Clemson about November 1.

The new Entomologist has had a splendid preparation and experience. Because of his knowledge of bees and beekeeping, he will be a great asset to this great and rapidly growing agricultural state, for his interests are not only with the destructive pests but with the constructive insects, the honey bees.

Dr. Farrar received his Doctor of Philosophy degree at Iowa State College at Ames, Iowa, in 1933. The following is a list of his activities:

Milton Dyer Farrar — Lawrence, Kansas — October 15, 1901.

Iowa State College, Ames, Iowa, B. S., 1925.

South Dakota State College, Brookings, S. D., M. S., 1927.

Iowa State College, Ames, Iowa, Ph. D., 1933.

Instructor Beekeeping, South Dakota State College, Brookings, 1925-1927.

Research Fellow, Crop Protection Institute, Ill. Natural History Survey, Urbana, Ill, 1927-1933.

Dr. M. D. Farrar

Research Entomologist, Ill. Natural History Survey, Urbana, Ill., 1933-1946.

Associate Director, Crop Protection Institute, Durham, N. H., 1946-1949.

Entomologist and Head Dept. Entomology and Zoology, Clemson Agricultural College, Clemson, S. C., 1949.

XUM

New York-New Jersey Apicultural Board Grants Diplomas

F. W. Gravely of The A. I. Root Company of New York addresses assemblage of the New York-New Jersey Apicultural Board at recent graduation exercises. Also in the picture are left to right: Charles W. Giguere, Vice-President, North Jersey Beekeepers Association; R. Parker Hamilton, Chairman of the Board; Dr. E. J. Dyce, Cornell University; Herbert A. Shera, Treasurer, North Jersey Association; and Dr. Peter Sammartino, President of Fairleigh - Dickinson College. — Photo by C. T. Pomeroy, Jr.

Beekeepers in New Jersey and in Westchester and Bronx Counties, New York, may now become Registered Apiculturists by completing a course of study outlined by the New York-New Jersey Apicultural Board.

This course includes a series of lessons on beekeeping issued by Pennsylvania State College, plus a number of field tests conducted by officers of the Board. The Pennsylvania State College course is a comprehensive combination of scientific and practical knowledge written by Prof. Edwin J. Anderson of that college. The field test includes manipulation and care of the hive with particular emphasis on detection and treatment of diseases. Officers of the Board who conduct the field tests must also preside at the written examinations of the Pennsylvania State College studies. Any beekeeper or member of the three groups may take this course and when he has satisfactorily complied with all requirements is entitled to a diploma as Registered Apiculturist.

Beekeepers Should Plant Pussy Willows

By George Rehman, North Baltimore, Ohio

Pussy willows furnish bees large amounts of pollen and nectar early in the spring at a time when they need it the most. It makes a very decorative tree for lawns and hedges. Waste land within range of bee yards can be planted easily from cuttings made from pussy willow tree limbs Select parts of branches are selected, being sure each cutting has about eight good live leaf buds, pushing three or four buds under ground and leaving about the same number above ground as early as possible in the spring. Roots can also be started on these cuttings if placed in jars of water in the house.

We have several pussy willow trees around our yard and honey house which we prune back each year as they are coming into bloom. We haul these pussy willow branches out to bee yards where pollen is scarce and it is surprising how quickly the bees find them.

Some parts of the country are blessed with lots of wild pussy willow trees but here in this farming section there is no waste land and the bees appreciate pussy willow bloom.

New Honey Recipe Book

At long last, a recipe book beautifully printed in full natural colors, featuring honey, is available. It is the work of the Sioux Honey Association, to which splendid organization it does great credit. There are beautiful illustrations in full color of Pumpkin Chiffon Honeypie, Honey Orange Ham Loaf, and Honey Crunch Apples that combine to make one forget his waistline and look forward to the chance to prove that these good things taste as good as they look. There are also full-page illustrations of Snowball Fudge Cake, Honey Date Bars, etc. There are some 42 recipes in all covering a variety of foods. Some of these recipes, such as Ham Loaf, surprise one in that they call for the use of as much as a third of a cup of honey. The book is beautifully printed on very good paper.

Under the heading "There's Magic in Honey" the following appears on the first page:

"Of course you know what a treat honey is on hot rolls, griddle cakes, waffles, and cereals . . . and on grapefruit . . . but wait till you discover what a wonderful cooking ingredient it is!

"Honey has a magical ability to absorb and retain moisture. Cakes, cookies, desserts, and candies dry out slowly and may even improve upon standing. For example, Honey Date Bars (see cookie recipes) at first are a bit 'chewy' but a batch sent to that boy or girl away at school will arrive mellow and soft. Using honey, you can do your baking ahead of time — and not be afraid of staling.

"Another fine attribute of honey is that it seems to blend all other flavors better. Meats and vegetables have a much richer taste when honey is used.

"Remember honey is a safe food, the year round. Its concentration of wholesome sugars is so high that bacteria cannot live in it.

"TO STORE HONEY: Keep liquid honey in a dry place. Since it absorbs moisture, do not put it in the refrigerator but keep it on a pantry or cupboard shelf. Freezing does not injure the color or flavor but may hasten granulation. If honey has granulated or solidified, simply place the container in a bowl of warm, not hot, water until the crystals are melted.

"TO MEASURE HONEY: Use the same measuring cup in which you have first measured shortening. By doing this you will not waste honey.

"TO COOK WITH HONEY: Follow honey recipes as carefully as you would any other recipe, using accurate measurements. Remember, you may bake your cakes and cookies a full day ahead when cooking with honey and be sure of a moist, rich, flavorful product.

"TO REPLACE SUGAR WITH HONEY: In cake or cookie recipes calling for sugar use the same amount of honey. Reduce liquid by ¼ cup for each cup of honey used. For example, if the recipe calls for 1 cup sugar and ½ cup liquid, use 1 cup honey and ¼ cup liquid."

The Sioux Honey Association is to be congratulated on a courageous determination to bring out a honey book that is of benefit to the whole industry and a credit to the publishers.

Bees Paid the Taxes

By James H. Davis

West Conshohocken, Pa.

After the 1949 Farm Show at Harrisburg I had to undergo an operation in the hospital. My savings were exhausted but I still have my home. There was a beekeepers' meeting in Montgomery County at which prizes were offered for comb honey. My wife took first prize and sold the honey. Last year I had about 500 4 x 5 sections of comb honey and my wife extracted about 700 pounds of nice honey besides.

If anyone wants to know whether bees pay, I am the man with the answer. The bees have taken care of my home, they have paid the taxes, and bought my winter supply of coal.

XUM

A TALK TO BEGINNERS

(Continued from page 225)

hive. The bees will not fly around much because they are filled with syrup. The queen, which is also wet with syrup, should be released from her cage among the bees. She cannot fly away because her wings are wet. She will start to lay sooner than a queen that has to be released from a queen cage by the bees. Packages should be installed late in the evening so that the bees will settle down during the night.

Providing Comb Space or Supers

When colonies are wintered in single- story hives and are populous during April, it is usually necessary to add a super during the latter part of the month at the time dandelions and fruit bloom appear. This gives such colonies ample comb space for brood rearing and incoming nectar and pollen. After having used all available space in the lower chamber, the queen will move into the upper chamber and utilize the combs for brood rearing.

It is not uncommon to find colonies with brood in from 10 to 14 combs late in the spring just before the main honey flow from the clovers starts. Such populous colonies are likely to store the maximum amount of surplus honey if and when it is available.

Colonies wintered in two brood chambers, sometimes called food chamber hives, are also likely to need one or more additional supers during the spring honey flow. It is customary to add supers containing drawn combs, if such combs are available. These supers are added without using queen excluders under them. Some beekeepers may use queen excluders but the majority do not use them during the early part of the season. When queen excluders are not used the queens may occupy the combs in the super added during fruit bloom. This means that a good prolific queen may have brood scattered in the combs of a three-story hive. When the queen is permitted to travel from one super to another and is not confined to a relatively small comb space, swarming is not likely to occur. The general concensus seems to be that congestion within the hive is the main cause of swarming.

When the main honey flow begins and danger of swarming is over, the queen may then be placed in either a single or a double brood chamber underneath a queen excluder. Supers are then added on top as needed.

Swarms are not likely to issue during the month of April in the latitude of Northern Ohio.

Bees Wouldn't Stay Put

Just recently a beekeeper who read in the Asked and Answered Department of Gleanings the method to be used for moving bees a short distance, implied that it was a waste of time and space to mention or explain such a simple thing as moving bees a short distance. I told this beekeeper the following experience I had about 20 years ago:

I was visiting a friend in the country who had purchased a hive of bees which he had placed on two blocks of wood near his wood pile in the back yard. He mentioned his plan to carry the hive of bees from the wood pile over into the orchard and set it under an apple tree, a distance of about 100 feet. I tried to tell him that he might have difficulty in having the field bees find the new location under the tree and that it would seem preferable to move the hive a few feet each day until it occupied the new location under the apple tree. Apparently my friend thought I was joking. At any rate, he had a good laugh over the idea.

The next evening after dark he called me and said, "Say, I moved that hive from the wood pile to the location under the apple tree, but the fool bees won't stay in the hive. They insist on clustering on the blocks of wood." I then called his attention to what I had tried to tell him the day before. Right then and there he was learning something about bees by the trial and error method. He had to move the hive back to the old location on the two blocks of wood so the bees could enter, then move it a few feet each day to the new location, as I had suggested. If he had moved the hive after dark when all the bees were home, and had put some sticks or branches of a tree crisscross over the entrance of the hive so that the bees would have been obliged to mark their new location, he might have gotten by. And so, it is a case of live and learn.

Siftings

"You may not be what you think you are but you are what you think."—Anonymous.

* * * * *

"Swarm cells are distinguished from other natural queen cells by the fact that their base is thick and projects, standing clear of the midrib of the comb. The bases of the others, on the other hand, are derived from transformed worker cells and therefore the cavity reaches the midrib of the comb." — G. Muzzati, Udine, Italy, in an article appearing in The Bee World for June, 1935.

* * * * *

"There are times when we are wise if we say we do not know enough to give judgment."—H. J. Wadey in "Behavior of Bees".

* * * * *

"As I grew in experience I learned to go more to the bee for my information. I learned that should I ask a dozen men a question I might get a dozen different answers, while if I asked the bees a question I got just one answer and that the correct one. No, they never gave me a five-to-four Supreme Court decision but their decision is always unanimous."—Jay Smith, Fort Myers, Florida, in his new book "Better Queens".

* * * * *

"A prominent local beekeeper sells lots of larvae as fishbait to fishermen in this vicinity! Larvae from wasp nests were being used for bait, so he got the idea of supplying larvae from his hives." — Robert Hardin, South Carolina.

* * * * *

"When I read only today of the man who read the first issue of Gleanings 'way back in 1873, it gave me a thrill to know that I have that copy and all those that followed, right here beside me."—From a letter dated January 10, 1950, written by Leo. F. Hannagan of Sanford, Florida.

* * * * *

"The rural population of the European continent, especially that of the Slavic countries, used honey for all kinds of wounds and inflammation. 'Honey Ointment' consisting of equal portions of honey and white flour, mixed well with a little water, had a wide usage."—From "Honey and Health" by Dr. Bodog F. Beck.

* * * * *

"This has been one of the driest summers ever seen in New England. And right in this little area of Southeastern Massachusetts it has been drier I think than anywhere else. All summer we watched showers go north of us and south of us, and even climb half-way up the sky in the northwest and then forgetting their purpose, simply disappear.

"We are fond of honey and eat a lot of it. But what we ate this year had to be bought. A ridiculous situation—a man with bees in his back yard buying honey from the store." —From a letter written January 2, 1950, by G. M. Lord.

* * * * *

"On December 23, 1949, I was checking at my apiary and each colony was out taking a flight. Just a few rods from the apiary were some pussy willows. To my amazement I found the bees busy as they would be in early spring. I watched them bring back their loads and go into the hive. They were busy as could be until the sun went down. Now this seems so unusual for this date up in this north section of Monroe, New Hampshire, for ordinarily the snow would be high around them and they would be in their winter cluster." — Everett L. Chase, New Hampshire.

* * * * *

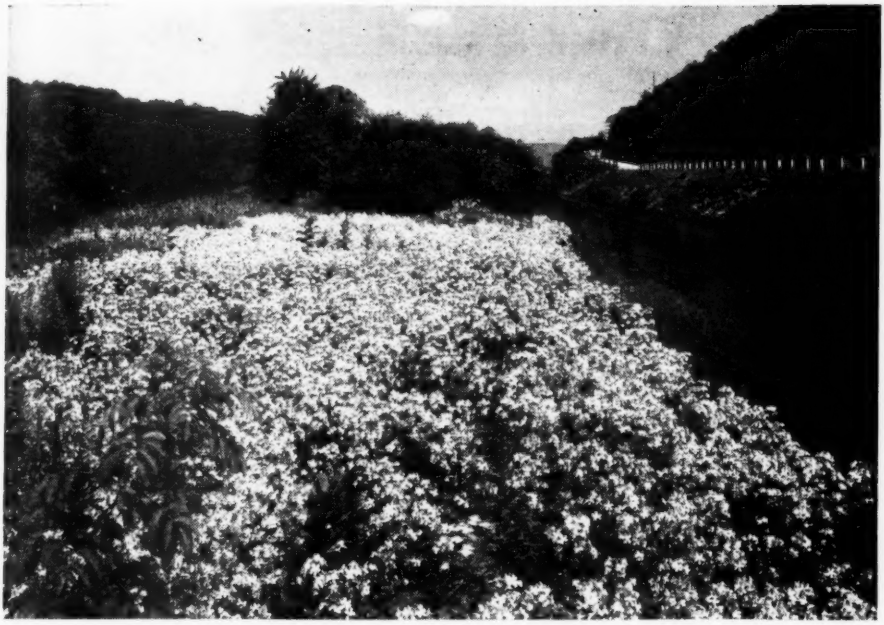
"I have heard it said that bees move an egg into a queen cell when they are ready for it, but I presume that normally the queen lays in a queen cell. At any rate, I have seen her do so in an observation hive. I watched a cell being built by two or three bees for some two days. When it was about one-fourth inch in depth there were far more bees around it and they became very excited when the queen approached them in her perambulations, and obviously tried to induce her to take an interest in their cell. She began to inspect it and walked away. She returned many times to it but walked off each time until finally she appeared satisfied and laid in the usual way."—From The Bee World for June, 1935.

Winter

NORTH DAKOTA BEES BURIED DEEP IN THE SNOW
These bees were moved behind a windbreak for protection during the winter, and peculiar weather conditions buried them beneath the snow. Heat from the hives melted the snow around them and gave the bees a large air space. Only two of the hives failed to come through even though they were drifted over for at least six weeks. The two colonies lost died from lack of stores. — R. Ridgway, Jamestown, North Dakota.

SEEING IS BELIEVING
This picture was taken by I. O. Jones of Montgomery, Alabama, of one of his apiaries this past winter during a cold spell. It shows that the sunny South does have some snow once in a while.

Summer



Bouncing Bet is an "escape" from colonial gardens, and now grows wild along railroads, roadsides, etc. Often acres of this plant may be seen. Bees work the flower industriously.—Paul Hadley, Philadelphia, Pennsylvania.

A well-kept apiary in Florida. The hives are mounted on benches.

Buy and Sell Here

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

NEW CROP of honey shipped daily from producer in Florida. Pure orange blossom, 5 lbs., $2.25; Pure Florida cut comb honey, 5-lb. pail, $2.75. No C.O.D. orders, all shipments prepaid. E. R. Raley, Daytona Beach, Box 1610, Florida.

CLOVER extracted honey in sixties. Abram Brubaker, Lancaster, Pa., Rt. 1.

AMBER, LIGHT AMBER, AND WHITE honey in 60's. Sample, 15c. Joseph Fekel, Rt. 4, Vineland, N. J.

ORANGE BLOSSOM HONEY in new 60's. Peter W. Sowinski, Fort Pierce, Florida.

CLOVER BASSWOOD HONEY, blended, in new 60-lb. cans, 10c. Order from ad. Hesseling's Honey Farm, Potosi, Wis.

CLOVER, EXTRACTED, in 60-lb. cans. Liquid, $8.40 per can. Crystallized, $8.00 per can. Lose Brothers, 206 E. Jefferson St., Louisville, Ky.

5000 lbs. LIGHT AMBER CLOVER honey in 5, 10, and 60 lb. cans. With or without labels. Priced reasonably. W. O. Hershey, 119 Pine St., Lancaster, Pa.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—Honey and wax, any quantity. Send samples and prices. Alexander Company, 819 Reynolds Road, Toledo 7, Ohio.

CASH FOR YOUR HONEY—Light extracted or comb. Regular trade send sample. 60-lb. cans furnished if desired. W. R. Moomaw, Stone Creek, Ohio.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 1360 Produce St., Los Angeles 21, Calif.

WANTED — White and amber honey. Any amount. D. F. Treap, 316 Keenan Ave., Cuyahoga Falls, Ohio.

HONEY AND WAX WANTED — Mail sample. Advise quantity. BRYANT & SAWYER, 2425 Hunter St., Los Angeles 21, Calif.

WANTED—EXTRACTED HONEY—Clover or light amber. C. H. Denny, Rt. 4, Ravenna, Ohio.

CASH FOR BEESWAX — Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 N. High St., Columbus 2, Ohio.

WANTED—Comb honey and extracted honey, large or small amounts. Send price list and samples. R. A. Raley, Box 2263, Daytona Beach, Fla.

WANTED—White and amber honey in bulk quantities. Schultz Honey Farms, Ripon, Wisconsin.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

WANTED 5,000 to 12,000 lbs. of white clover honey in 5-gal. cans at once. Will pay 10½c delivered. Roscoe F. Wixson, Dundee, N. Y.

WANTED: Good buckwheat honey, send sample and state price. Eastern Food Products, 115 Division Ave., Brooklyn, New York.

FOR SALE

QUEENBEE PAINTING OUTFIT, $1.00; colony records, 10-15c postpaid. Southwick Apiaries, Waban, Mass.

WE CARRY a full line of ROOT QUALITY Bee Supplies. Prairie View Honey Co., 12303 12th St., Detroit 6, Mich.

FOR SALE — Write for large free Bee Supply Catalog. We manufacture bee hives, foundation, tanks, and extractors. Listing many items not found in other catalogs. Walter T. Kelley Co., Paducah, Ky.

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Mich.

The only comb foundation plant in the East. We sell foundation, work your wax, render combs and cappings. Robinson's Wax Works, R.D. 3, Auburn, N. Y.

SIMPLEX TRAP clips queens without handling, $1.00 postpaid. Instant Frame Spacers — eight-nine, specify size, $1.50 postpaid. Free circulars. George Leys, 36 Jackson St., New Rochelle, N. Y.

FOR SALE: Root wax press, good condition, $18.00. Used hives, fixtures. E. S. Chrisman, R.D. 2, Pottstown, Pa., Coventryville, Route 23.

YOUR WAX WORKED into medium brood foundation, 23c pound; 100 pounds, $19.00. Medium brood foundation for sale at 65c pound. Fred Peterson, Alden, Iowa.

USED EQUIPMENT—300 eight and ten frame standard hive bodies with Hoffman frames, $1 each; 300 nuclei boxes for fertilizing queens, have robber, wind, and waterproof covers, 75c each; division board feeders, $75 per 100; Hoffman frames, $3 per 100. 2000 4¼ x 4½ plain sections, $10 per M. Nothing shipped. H. G. Quirin, 500 So. West St., Bellevue, O.

FOR SALE—Honey house at Elk Rapids, Mich., (near Traverse City). Also orchard and summer locations. Ralph Blackman, Portland, Mich.

WINDOW CARTONS, attractive, two-colored, selling out at a sacrifice, 4¼ x 4¼ x 1⅞ in., $9.00 per 1000, fob. Lose Brothers, 206 E. Jefferson St., Louisville, Ky.

CLEAN UP AFB WITH SULFA. 25 tablets, 50c; 50, $1.00; 100, $1.50; 1000, $7.00. Write for big 64-page catalog listing many items not found in other catalogs. WALTER T. KELLEY CO, Paducah, Kentucky.

30 ten-frame two-story colonies, each with 3 standard 9⅛" supers drawn comb, $450.00; 13 used 8-frame 3-wire excluders, 50c each; 40 ten-frame 7-wire excluders, new 9⅛" frame end bars, $2.00 hundred. Hiltner's Apiaries, North Creek, O.

BEE EQUIPMENT and modern extracting plant in the clover region. 850 deep supers with perfect drawn combs, 400 empty supers, 300 metal top covers and bottoms, good as new at half price. Many other items. Health certificate furnished. Will sell all or part only. Let us know your needs. Cloverbelt Apiary, Madison, Minn.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

REAL PETS — Brown's non-stinging, non-swarming bees. Honest producers. Season price, $2.00 a queen. Brown's Apiary, Kissimmee, Fla., R.D. 1.

GOLDEN QUEENS, 90c airmail. Write for quantity prices. O. E. Brown, Route 1, Asheboro, N. C.

CAUCASIAN Laying Queens with 2 lb. pkg., $3.00; 3 lb., $4.00. Extra queens, $1.00. Miller's Apiaries, Rt. 1, Three Rivers, Texas.

S. J. HEAD, Crossett, Ark., offers best bargains in bees and queens.

CAUCASIANS—Booking orders for 1950. Lewis & Tillery Bee Co., Route 1, Box 280, Greenville, Ala.

YANCEY HUSTLERS — Reliable package bees and queens. Prices right. Caney Valley Apiaries, 2500 Nichols, Bay City, Texas.

PACKAGE BEES AND QUEENS—Booking orders for 1950. Claud M. Bowen and Sons, Live Oak, Calif., Route 1.

BEES AND QUEENS. Send for FREE circulars. Over 30 years a shipper. Blue Bonnet Apiaries, Weslaco, Texas.

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

Michigan Headquarters for Root QUALITY Bee Supplies
Complete Line of Bee Supplies and Honey Containers
Prompt Service
MICHIGAN BEE and FARM SUPPLY
Northern Branch at Elk Rapids, Michigan, closed for the season.
Main Office — Mail Order Address
Box 7 Lansing, Michigan

G. B. Lewis Wooden Goods!
Dadant's World Famous Crimp Wired Foundation. — Their 85 years' experience is your safeguard. Catalogue on request.
Dotson's Apiaries
3059 W. Roxboro Rd., NE
ATLANTA, GEORGIA

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

THRIFTY BEES

Combless packages and queens
Three-banded Italians only
Package prices include
an untested queen

	1 to 24	25 to 99	100-up
2 lb. pkgs.	**$3.25**	**$3.00**	**$2.85**
3 lb. pkgs.	**4.00**	**3.75**	**3.50**
Unt. queens	**1.20**	**1.10**	**1.00**

For queenless packages deduct $1.00 from above prices.

Remember — Thrifty Bees are Guaranteed to Please

We offer you light weight shipping crates, full weight packages, good service, and first quality bees.

W. J. Forehand & Sons
Fort Deposit, Ala.
Breeders Since 1892

Italian Bees and Queens

CUSTOMERS: New and old, I take this method of soliciting your future orders and will appreciate a continuance of your business. There is no deposit required to book an order with me. Full weight, a health certificate and live arrival guaranteed. Queens clipped at no extra cost.

Price for 1950 package bees with queen; also extra queens:

	2 lb.	3 lb.	4 lb.	Ex. Queens
1 to 24	**$2.50**	**$3.45**	**$4.30**	**75c**
25 to 99	**2.40**	**3.35**	**4.15**	**70c**
100 up	**2.35**	**3.15**	**4.00**	**65c**

Farris Homan
Shannon, Miss.

Yellow Italian Bees & Queens

Package bees with queen:

2 lbs.	3 lbs.	4 lbs.	5 lbs.
$3.30 ea.	**$4.20 ea.**	**$5.10 ea.**	**$6.00 ea.**

Queens, 90c each

We guarantee live delivery, prompt service, and health certificate. 10% down to book your order, balance 10 days prior to shipping date.

Oscar Arnouville
Box 35 Hamburg, La.

Elk Mt. Pollen Supplement is a scientifically compounded Bee Food Vitamin Enriched substitute for nature's own Pollen. Postpaid, bag, $1.00 — feeding instructions. Elk Mt. Products Co., Box 233, Carbondale, Pa.

BREWER LINE BRED Caucasian Queens, 1-24, $1.10; 25-99, $1.00; 100-up, 95c. Member ABBA. Brewer Brothers Apiaries, 36-16 Caucasian Circle, Tampa 9, Florida.

ITALIAN QUEENS: 1 to 10, 90 cents; 11 to 49, 85 cents; 50 up, 80 cents. Walter D. Leverette, Fort Pierce, Box 364, Fla.

YES, ALL COMPARISONS prove that Green's profit producing queens are the best to be had. They will please you from the brood nest to the harvesting of a great crop of honey. Backed by 22 years of breeding better queens. Price, 90c each; after May 20th, 75c each. D. P. Green, Deland, Fla., Rt. 2.

CARNIOLAN QUEEN BEES, $1.20 each; 2 pounds bees with queen, $3.50; 3 pounds bees with queen, $4.50 each. EPHARDT HONEY FARMS, Batchelor, Louisiana.

MARCH AND APRIL DELIVERY of Italian package bees and queens. Three pound package with queen, $4.50. Queens $1.20 each. Write for quantity discounts. Brose Apiaries, P. O. Box 36, Felton, Calif.

ITALIAN PACKAGE BEES and nuclei, also queenless packages. Walker Apiaries, Pharr, Texas.

GOOD ITALIAN QUEENS, 75c each. D. W. HOWELL, Shellman, Georgia.

THE SAME PRICE TO EVERYBODY. 75c for Italian queens, 2 lb. package with young laying queen, $3.00; and 3 lb. package with young laying queen, $3.75. Southern Apiaries & Supplies Company, Chatom, Alabama.

THREE BANDED ITALIAN bees and queens, best of quality and gentle. Satisfatcion guaranteed. 1 to 25, 2 lb. with queen, $3.50; 3 lb. with queen, $4.50; 25-up, 2 lb. with queen, $3.25, 3 lb., $4.25. Select untested queens, 1-25, $1.10; 25-up, $1.00 each. Alamance Bee Company, Graham, N. C.

CAUCASIAN BEES AND QUEENS, extra good workers and very gentle. 2-lb. with queen, $3.50; 3-lb. with queen, $4.50; Select untested queens, 1 to 25, $1.10; 25-up, $1.00. Tested, $2.00. Write for prices on larger orders. Black River Apiaries, Elliott Curtis, Mgr., Currie, N. C.

GOLDEN ITALIAN BEES and Queens, best of quality, very gentle. 2-lb. with queen, $3.50; 3-lb. with queen, $4.50. Untested queens, select, 1 to 25, $1.10; 25-up, $1.00 each. Satisfaction Guaranteed. Write for prices on large orders for packages. Carolina Bee Farm, Graham, N. Carolina.

FOR SALE—15 colonies of bees in two stories, metal covers in good condition. F. C. Wiles, Wellington, Ohio.

IN FLORIDA — 600 1½-story colonies, $10.00 each; Cypress hives. Combs in good condition, all young queens. With six frames of brood or more, and ready for production. No disease or junk, extra equipment below cost. Box 1610, Gleanings, Medina, Ohio.

HYBRID QUEEN BEES, 75c each. postpaid. EPHARDT HONEY FARMS, Batchelor, Louisiana.

EARLY PACKAGE BEES. Prompt shipment begins May 10th. Two-pound package and queen, $5.50 postpaid. Three-pound package and queen, $6.60 postpaid. Choice Italian queen, $1.25. Safe arrival guaranteed. Health certificate furnished. Birdie M. Hartle, Reynoldsville, Pa.

IMPROVED ITALIANS, 600 pound strain, 3 pounds package bees and queen, $5.00 prepaid. Queens, 90c. Henry Loehr, Caldwell, Texas.

CAUCASIAN QUEENS, 1 to 9, $1.25 each; 10 to 49, $1.00 each; 50 and over, 90c each. Howard E. Crom, Rt. 1, Box 75, Ripon, Calif.

3 lbs. ITALIAN BEES with loose mother queen, April 15th delivery, $4.50. Jno. W. Elliott, R.F.D. 2, Shelby, N. C.

SUPERIOR ITALIAN-CAUCASIAN hybrid queens. Satisfaction or money back. Introduction your responsibility. Can fill more small orders April, May, June, $1.00. James Seys, Rt. 1, Pharr, Texas.

CAUCASIANS — Make your own increase with Caucasians. State your requirements. We make the price. History and habits of the Caucasians mailed free. Modern methods of placing queens and packages in hives at destination, and care thereafter, furnished with each order. Miller's Caucasians, Three Rivers, Texas.

THE NORMA ROY APIARY Italian bees, 2 pounds with queen, $3.00; 3 pounds with queen, $3.50; 4 pounds with queen, $4.00. Live delivery and a health certificate with shipment. Norma E. Roy and Son, Hessmer, La.

BRIGHT YELLOW GOLDEN Italian Bees and Queens. 2 lbs., $3.50; 3 lbs., $4.50. Queens, $1.10 each. Tested, $2.00. Guilford Apiaries, 4300 A. Burlington Rd., Greensboro, N.C.

THREE-BANDED ITALIAN Bees and Queens. 2 lbs., $3.50; 3 lbs., $4.50; Queens, $1.10 each; Tested, $2.00. Bessemer Apiaries, 4300 A. Raleigh Rd., Greensboro, N. C.

FOR SALE—25 colonies bees including one empty super each. No. disease. $7.00 each. Earl Henry, Gambier, Ohio, Rt. 2.

FIFTEEN good 2-story colonies, packed. Fifty comb honey supers, all $150. J. Kubinski, 221 Dewitt Ave., Elmira, N. Y.

FOR SALE—80 colonies Italian bees, two stories, winter cases. Disease free. Fully equipped and locations. Homer Van Scoy, Candor, N. Y.

IF YOU WANT BEES, mine will please you. 10-frame hives, good bees, cheap. Joe C. Weaver, Rt. 3, Springfield, Mo.

FOR SALE: 50 hives of bees. 1½-story Root hives. Strong. No junk. Johnson Bros., Toulon, Ills.

400 COLONIES, supers, extracting equipment. Can retain locations. Inspection certificate furnished. Box 293, Port Huron, Mich.

FOR SALE—Eight colonies, $10.00 each. Never had disease. $50.00 worth of hives, supers, foundation, etc. Must sell because of ill health. Earl Uloth, Jasper, Mich.

80 COLONIES of bees, 10-frame hives, mostly Root's. Equipment for 150. Good condition. Extractor. Honey tank. No disease. Emil Cimfl, Cumberland, Wisconsin.

FOR SALE: 100 colonies bees, inspected. Bee supplies and honey. William March, R.D. 3, Mantua, Ohio, 2 miles west of Shalersville, Route 303.

Three-Banded
Italian Bees and Queens
We are trying to keep our prices in line with the low prices of honey this year. We can supply you with the same high quality bees and queens that we have been producing the past TWENTY YEARS. Prices as follows:
2-lb. package with queen, $2.25
3-lb. package with queen, 3.15
Untested Italian queens, .75
New light weight packages — overweight — disease-free. Guaranteed live delivery at your station. For queenless package deduct price of queen.
Lucedale Apiaries
Lucedale, Mississippi

Package Bees and Queens
Now Booking Orders for the 1950 Season
F. E. Morrison
R. 3 Box 3696
Auburn Calif.

Bees & Queens
Quality Fine
Price in Line
Write
J. F. McVay, Jackson, Ala.

Italian Bees and Queens
of Spring 1950
2 lb. pkg. with queen, $2.75
3 lb. pkg. with queen, 3.50
4 lb. pkg. with queen, 4.50
20% with order, balance 10 days before shipping date. Health certificate. Guaranteed live delivery.
The Star Bee Farm
Hessmer, La.

Root Quality Bee Supplies
Prompt service from a complete stock of Bee Supplies.
If driving to Indianapolis for bee supplies, drive to our store, 121 N. Alabama St., and we will secure parking for your car.
A. I. ROOT CO. OF INDIANAPOLIS
121 N. Alabama Street
Indianapolis 4, Indiana

Protect Your Future. Buy Your Extra Savings Bonds Now.

DARK THREE-BANDED ITALIANS
Bees and Queens for 1950
We are state inspected, and Guarantee live delivery and complete satisfaction.

	1-9	10-up
2 lb. Pkg. with Queen	$3.25	$3.10
3 lb. Pkg. with Queen	4.00	3.75
Extra Queens	1.00	.85

A. M. PEACH Baldwyn, Mississippi

KOEHNEN'S
Package Bees and Queens
For Quality and Service
KOEHNEN'S APIARIES
GLENN, CALIFORNIA

Leather Italian
Famous Queens,
$1.00 each
Bees, 75c lb.
O. K. Anderson
& Son
Coffee Springs, Ala.

Yellow Italian Queens & Bees
Same old reliable strain.
Worlds of bees to draw from
Live delivery — Health certificate
With queens: 2 lbs., $2.75; 3 lbs., $3.50
Unt. Queens, May delivery, $0.75 p.p.
PLAUCHE BEE FARM, Hamburg, La.
T. A. Plauche (Prop.)

Hardy Northern Queens
Reared up North to take cold weather, and produce maximum surplus honey — shipping starts May 30th. **Only Tested Queens**—$1.00 each postpaid. Booking orders now—no down payment. Send full price 15 days before shipping date.
RICHARD LIVERMORE APIARIES
Collins, Ohio

HOLLOPETER'S strain — prolific young Italians queens, return mail, $1.00 each. Write us your needs for 1950.
White Pine Bee Farms, Rockton, Pa.

HELP WANTED

WANTED — SEMI-TRAILER TRUCK DRIVER to drive bees north. Must be careful driver and to furnish references. EPHARDT HONEY FARMS, Batchelor, Louisiana.

NEED good honest man to share 50-50 220 colonies of bees. Steve Zupko, 4463-23 St., Wyandotte, Michigan.

WANTED — Reliable man, with good habits, to work with bees and honey production. Prefer one with some experience. Must be handy all-around man. J. B. and C. J. Merwin, Prattsville, New York.

WANTED: One experienced Bee Man and one helper. House furnished. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

POSITION WANTED

POSITION WANTED: Experienced in comb honey production. Albert C. Sheffield, 8 Terrace Place, Troy, N. Y.

SEEDS

THREE SPECIAL packet seed collections SEEDS OF HONEY PLANTS. FORAGE CROPS—one packet each ten varieties. BEE GARDEN—six packets seed unusual varieties. FOR NATURALIZING — eight packets. Each collection $1.00; all three (24 packets seeds of 24 good honey plants) for $2.75 postpaid. Free descriptive catalog. Pellett Gardens, Atlantic, Iowa.

TIME TO PLANT BETTER AND LARGER BASSWOOD TREES for quick bloom and shade. Pyramidal Silver basswood (**Tilia tomentosa**) stands more heat and drought. 4-5 ft., $2.75; 5-6 ft., each $3.75. Cardata. Small leaf European Basswood, red twigged. 4-5 ft., $2.75; 5-6 ft., $3.50; 6-8 ft., $4.00 each. American basswood, 4-5 ft., $1.50; 5-6 ft., $2.50; 6-8 ft., $3.00; and 8-9 ft., $4.00, F.O.B. St. Peter, Minnesota. Order from this ad. Hopa Ornamental Crab, 3-4 ft., $1.20 postpaid. Free Bee Pasture Catalogue. NICOLLET COUNTY NURSERY, St. Peter, Minn.

MISCELLANEOUS

WANTED — Several hundred 8-frame hive bodies and shallow supers. D. W. Simmons, Carnation, Wash.

WANTED: 50 colonies of bees around April 15th. Must be inspected. Fred Russell, Chelmsford, Mass.

FOR SALE OR LEASE to experienced man, 500 to 800 colonies. Choice locations. First class 10-frame equipment. Permanent position to right man. Apply at once. Starting season March 1. Box 250, Gleanings, Medina, Ohio.

TRITOX — AMERICA'S NO. 1 MOLE EXTERMINATOR. PDB for wax moth control. Ladino clover seed. Bluevine seed. Mimosa trees. TRITOX CHEMICAL COMPANY, WASHINGTON, IND.

SUPPLIES

ATTENTION BEEKEEPERS IN MINNESOTA and adjacent states. We offer a real service on Lewis-Dadant Supplies, honey containers, and labels at a price saving to you. Top market prices paid for extracted honey and beeswax. HONEY SALES COMPANY, 1806-08 NO. WASHINGTON AVE., MINNEAPOLIS, MINN.

MAGAZINES

KNOW interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh, Dist Naini Tal, U.P., India, or obtainable from them. Subs. Rs7/—or 10 shillings or 2.25 dollars per annum. Single copy Rs¼ s. 1/9 or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

WESTERN CANADA BEEKEEPER—Official organ of the Manitoba Beekeepers' Association. One year, $1.50; two years, $2.25; three years, $3.00. In combination with Gleanings in Bee Culture, $2.75. 211 Affleck Bldg., Winnipeg, Canada.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

ANGORA GOATS

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription—$1.00. Sample copy—fifteen cents.

FRAME GRIP SEND NOW!!

This light modern tool is for easy handling and removal of frames from the bee hive. Thousands of satisfied customers have proven its worth.

$3.00 plus 18c postage fee

McCord Manufacturing Company
Rt. 2 Box 866
San Jose, Calif.

The Killions Say:

Produce More "Honey In The Comb"

We have spent over a quarter of a century in the breeding of queens and selection of equipment most suitable for the production of fine quality section comb honey. Our ventilated T super is superior to anything to be found. It is a pleasure for anyone to produce quality comb honey with this super. We know for sure no one is going to produce two to four times more shallow frame honey per colony than we do. A comb of quality honey, surrounded by a wooden frame, is a picture too beautiful for words.

Our price circular is going into the mail, so write for your copy today. It includes our T super, queens, section press, cutting box, foundation fastener, sections, pollen supplements, and other material. We also list the Humidry for moisture removal from honey houses.

My book "Honey In The Comb" is ready for the printer.

Killion & Sons

APIARIES
Paris, Illinois

STOLLER'S quality package bees and queens. Write Stoller Honey Farms, Sylvester, Ga.

Package Bees Headed by Mountain Gray Caucasians or Leather Italian Queens

	1-24	24-99	100-up
2 lb. with queen	$3.60	$3.45	$3.25
3 lb. with queen	4.50	4.25	4.10
Queens	1.10	1.00	.95

March 20 delivery
TWIN BEE CO-OP.
3616 Caucasian Circle, Tampa 9, Fla.

Do You Know

That Woodman manufactures NINE different sizes and styles of Honey Extractors, Vane lifter type Honey Pumps, Automatic Pump control Tanks, Brand Capping Melters, and Power Uncappers? Many thousands of Bee Smokers, Bee Veils, Bee Gloves, numerous tools, and other equipment? Send for printed matter, over 350 listings.

A. G. Woodman Company

Grand Rapids, Michigan, U. S. A.

York's Package Bees and Queens for 1950

QUALITY BRED ITALIANS

The Strain Preferred by Leading Honey Producers

Prices with Young Laying Queens

Packages	2-lb.	3-lb.	4-lb.
1 to 24	**$3.25 each**	**$4.00 each**	**$4.75 each**
25 or more	**3.00 each**	**3.75 each**	**4.50 each**

Young Laying Queens, $1.00 each; Tested, $2.00 each.

Queenless packages, deduct $1.00 per package

Order direct from this ad and save time. Book order now and have bees shipped when wanted.

York Bee Company Jesup, Georgia

(The Universal Apiaries)

Better Bred Queens 3-Banded Italians

Frame after frame of smooth, even brood; super after super of honey; gentle, easy to work with; swarming cut to a minimum. This is the result of years of research and practical experience behind our Better Bred Stock. Our prices are right. Our capacity is 6,000 to 10,000 queens annually.

	Queens	2 lb. with queen	3 lb. with queen	4 lb. with queen
1 to 24	**$1.05**	**$3.25**	**$4.25**	**$5.25**
25 to 99	**1.00**	**3.10**	**4.00**	**5.00**
100-up	**.90**	**2.85**	**3.80**	**4.80**

Write for our special offer

Calvert Apiaries Calvert, Ala.

Stoller's Dark Italians

Bred for honey production, gentleness, long life. Very hearty. Nosema and supersedure of queens practically nil in our strain.

3-pound packages with young laying queens, $4.00 each; 100, $3.85. Young queens, $1.00 each; 100, 90c.

Sixteen years southern shippers. Thirty years, northern commercial honey producers.

These bloodlings limited. Book your order early. Write:

Stoller Honey Farms, Latty, O.

Shipping Point, Sylvester, Ga.

Three Banded Italian Bees and Queens

2 lb. packages, 1 to 24	**$3.00**
25 to 99	**2.75**
100 up	**2.50**
3 lb. packages, 1 to 24	**4.25**
25 to 99	**4.00**
100 up	**3.75**
Queens, 1 to 24	**1.00**
25 to 99	**.90**
100 up	**.75**

Full weight and live delivery guaranteed. Member of American Bee Breeders' Assn.

Haselmaier Apiaries

Mt. Vernon, Ala.

SUNKIST ITALIANS

Guaranteed live delivery — Health certificate — Satisfaction

Prices while they last:	1-20	Packages with queens 20-50	50-up
2-lb.	$3.00	$2.90	$2.75
3-lb.	3.75	3.65	3.50
4-lb.	4.50	4.40	4.25
Queens	.90	.90	.85

10% books your order — balance 10 days before shipment

Sunkist Bee Company Convent, La.

IN, OUT, AND IN BEEKEEPING

(Contiued from page 215)

the season with one half-depth super entirely filled with light aster honey. I took off one full-depth and six half-depth supers which extracted 165 pounds and left them with plenty of honey in a two-story hive. The hive body they started in had comb and honey but all the other frames had full sheets of foundation only. Seems like some kind of record.

The second package under the same conditions made two full-depth supers of honey which extracted 55 pounds and are wintering in a one and one-half story hive. They were a nuisance, however, all summer. They were a little on the mean side and they persisted in building braces across from one comb to another. Besides this they swarmed in late June shortly after I had put on the first super and before they seemed strong enough to think of such a thing. The original queen was clipped but the one with the swarm could fly and was obviously a new one. There were three queen cells in the hive, which I removed and I put the swarm in a super and set them back where they came from. There was no queen in the brood chamber but it took several weeks to get the new queen to quit the super and move down. Late in the fall they did settle down and get going like a real hive of bees, but if they survive the winter they are getting a new queen this spring.

My son has been a good student through it all and is very much interested. He checked into the hives a number of times by himself and reported on their doings, and last fall he removed part of the supers. He is not afraid of the bees and, happily, a sting does not poison him badly. He has seen one excellent colony of bees perform and is now looking forward to the next season.

Our bees are packed and very much alive. We are "in" to stay—we hope.

Modern Beekeeping

The picture magazine of beekeeping. We show you with pictures how to do the job easier, quicker, and better. Special inventor's page.
1 yr., $1.50; 2 yrs., $2.50; 3 yrs., $3.25.
Modern Beekeeping
Paducah, Kentucky

Make your package LOOK better and SELL better, with

Lithographed Labels

DESIGNED FOR YOU!

4 colors - varnished - die cut,
Good quality,
reasonable prices!

Write

BEN R. HAMILTON
LABEL DIVISION
Democrat Printing & Litho. Co.
Little Rock, Arkansas

Flowers' Quality Italians

That will stand test for honey gatherers, gentle, prolific. Our motto is to serve you with the best young bees and queens money can buy. Ask our customers. State health certificate with each shipment, prompt, live delivery guaranteed. Replacement or refund made promptly upon receipt of bad order from your express agent. No orders too large or too small, shipped when wanted. Place orders early.

Packages with young queens F.O.B.

2-lb. package	$2.50
3-lb. package	3.15
4-lb. package	4.00
Ex. queens	1.00 Del.

Flowers Bee Co., Jesup, Ga.

Sure—You'll Like It
Send $1.00 for Six Months
(Trial Subscription Offer)
The Beekeepers Magazine
Lansing 15-B, Mich.
(Established 1938)

Healthy Italian Bees & Queens
Write for 1950 Prices
Georgia Bee & Honey Apiaries
P. O. Box 312 Hortense, Ga.

XUM

MERRILL'S
First Quality

Italian DR or
Regular Stock
Prompt Shipment

Quantity	1-12	12-1000
2 lb. pkg. with queen	$3.00	$2.50
3 lb. pkg. with queen	3.75	3.25
Untested queens	1.00	.75

Tested queens, $1.50

Breeding Queens, $5.00 each

Merrill Bee Co.
State Line, Mississippi
P. O. Box 194

Dixieland Quality
Leather Colored Italians
Quality package bees and queens

Booking dates open April and May	Queens	2 lb. pkg.	3 lb. pkg.
1-24	$1.00	$3.00	$4.00
25-99	.90	2.75	3.65
100-up	.80	2.50	3.30

Send your order in today

Dixieland Apiaries
Greenville, Alabama

ITALIAN BEES AND QUEENS
2 lb. packages with queen $2.75
3 lb. packages with queen 3.75
Queens, each ..... .80
10% down will book your order, balance 10 days before shipping date. Health certificate and live delivery guaranteed with each shipment.
BAYOU BEE COMPANY
Rt. 1 Box 49 Montegut, La.

Three Banded Italian Bees and Queens for 1950

	1-10	11-25	25-up
2 lb. pkg. w. queen	$3.25	$3.00	$2.75
3 lb. pkg. w. queen	4.25	4.00	3.75

Extra queens .....$.80 each
J. P. Corona
Box 124 Kenner, La.

Ohio Spring Bee Meeting Held in Columbus March 21-22

Even though the pollination service honey bees perform received considerable emphasis by various speakers, honey production, especially chunk and section comb honey, was discussed at some length by experienced producers.

The concensus was that to produce chunk honey successfully there must be intelligent apiary management, populous colonies, and a good honey flow. To avoid having pollen stored in shallow extracting combs it seems advantageous to use colonies occupying double-story brood chambers, with queen excluders under the supers. With the double brood chambers bees have more space below for pollen than they have in a single chamber.

Chunks of honey are cut from a shallow comb and placed attractively in a wide-mouth 2½ or 5 pound jar, then extracted honey is poured in to fill up the remaining space.

More section comb honey has been produced during the past season than for some years.

The lively discussion regarding the marketing of comb honey boiled down to the following:

(1) Section comb honey appears to be a seasonal product and must be marketed quite easily in the fall.

(2) It will command a reasonably good price if properly graded.

(3) The present demand for section comb honey is somewhat limited to a certain class of trade.

Jas. I. Hambleton, Apiculturist, U.S.D.A., Beltsville, Maryland, emphasized the importance of bees for legume pollination. There is a shortage of honey bees in this country. A test in alfalfa pollination was made in California in 1949. Six colonies per acre were scattered over a very large alfalfa field where no other pollinating insects were found. The field produced 900 pounds of clean seed per acre. The state average was 275 pounds. It is estimated that each additional colony of bees beyond one per acre (the minimum), up to five or six colonies per acre, will add 150 pounds of seed.

Dr. A. W. Woodrow of Legume Seed Research Laboratory in Columbus showed by means of colored slides the value of honey bees in red clover pollination in test plots maintained this past season.

AMERICAN HONEY INSTITUTE

(Continued from page 239)

spending, narder work on the part of grocers, and additional service to the consumer.

Honey, since the war, has had to compete with other products for the housewife's dollar. If the consumer is willing to wait even for basic foods until she absolutely needs them, this would also apply to honey. Honey, then, will have to be sold. Advertising in local papers, marketing carefully, seeking more efficient methods of production—all of these devices will have to be used.

To have the housewife buy honey in large quantities and frequently, she will have to be sold on the idea that honey can be used in many different ways. The inexpensive pamphlet put out by the Honey Institute called "Honey the Clock Around" shows the housewife how she can use honey in each meal to provide variety in her daily diet. They may be secured from the Institute for 80 cents per 100 pamphlets. Isn't it worth less than one penny per pamphlet to you to have your sales really boosted?

For results, then, get your honey on the market, display it where it can readily be seen, supply the consumer with suggestions, put it in containers that can easily be carried, and sell it at a price that is fair to both you and the housewife.

* * * * *

A word or two about state promotion. Honey is sold throughout the country — indeed, throughout the world. And the state where it is produced is of little importance to the consumer. The housewife is interested only in the FLAVOR and the BRAND of the honey she is buying. She knows that honey is produced in the same way throughout the country and that bees themselves get over the boundary line.

So if you want to see honey sell, advertise the product on its merits.

* * * * *

Responses to the letters the Institute sent to allied food industries, advertising agencies, and restaurants asking for cooperation and assistance during Honey for Breakfast Week have been very gratifying. hope the sales of honey and the dollars that result will give you boost and added enthusiasm as spring gets under way.

Whittle's

Leather Colored Italians

Get your Packages and Queens when you want them. Reserve 1950 Shipping Dates Early. Write for Our 1950 Prices On Package Bees and Queens Our Bees and Service Will Please You.

G. E. Whittle
Star Route West
Greenville, Alabama

KNIGHT'S

Three Banded Leather Colored Italian Bees and Queens

I guarantee full weight packages, young laying queens, safe arrival, prompt service, and your satisfaction.

	1-24	25-99	100-up
Queens	$1.20	$1.10	$1.00
2 lb. package	3.50	3.25	3.00
3 lb. package	4.50	4.25	4.00
4 lb. package	5.50	5.25	5.00
5 lb. package	6.50	6.25	6.00

For queenless packages deduct price of queen.
No charge for clipping

John T. Knight
Hayneville, Alabama

Italian Bees and Queens

Book your order early, to get pick of dates.
Health certificate, and live delivery guaranteed.

Packages with Queens:

	2 lb.	3 lb.	Queens
1 to 49	$2.50	$3.45	$.75
50 to 100	2.40	3.25	.70
100-up	2.35	3.15	.65

Homan Bros.
R. 2 Shannon, Miss.

Italian Bees and Queens

Shipped when you want them
2-lb. package and queen, $3.00
3-lb. package and queen, 4.00
Queens, $1.00
Alabama Apiaries
Uriah, Alabama

Package Bees
Queens

In field tests in Colorado our Skyline Hybrid Caucasian bees surpassed all others. A trial will convince you.

2-lb. package with Queen $3.00

3-lb. package with Queen $4.00

The Coffey Apiaries

Box 313
Whitsett, Texas

NORMAN'S
Package Bees

Quality—Service—Experience

Pure Italian Bees and Queens. Nothing but the best bright 3-Band Italians. Prompt service, full weight packages, young laying queens, safe arrival, and satisfaction quaranteed. State Health Certificate Furnished

Prices:

Untested Queens	$1.25
2 lb. package and queen	3.00
3 lb. package and queen	3.75

All packages F.O.B. Express

John A. Norman
Route 2 Ramer, Ala.

Queens Our Specialty

Italian, Caucasian, and Carniolans

Three Isolated Mating Yards to Prevent Mixing Breeds

Italian queens, 1-10, $0.90
11-49, $0.85 50-up, $0.80
After May 15th, $0.50 each
Carniolan, the most gentle and good producers, $1.20 each
Caucasian, very gentle and produce beautiful comb honey, $.90

All queens shipped by Air Mail and guaranteed to please

Walter D. Leverette Apiaries
Box 364 Fort Pierce, Florida

NORMAN BROS.

Package Bees & Queens

Old Fashion Dollar's Worth

Bright 3-Banded Italians

Order NORMAN BROS. package bees and queens, get the old fashion dollar's worth in superior quality, plus quick service, in light shipping cages. Safe arrival, satisfaction guaranteed, health certificate furnished. They will be ready when you want them.

	1-9	10-100
2-lb. pkg. with queen	$3.00	$2.75
3-lb. pkg. with queen	3.75	3.50
Untested queens	.90	.80
Tested queens	1.75	1.50

Package bees F.O.B. If wanted shipped by parcel post add postage

Norman Bros. Apiaries
Ramer, Alabama

Bees and Queens

Caucasians or Italians

All queens introduced in packages. 2-lb. package with queen, $2.75 each in lots of three or more. Prompt shipments with health certificate, and safe arrival guaranteed.

Little River Apiaries
Box 83 Gause, Texas

ITALIAN PACKAGE BEES AND QUEENS FOR 1950

2 lb. pkg. with young laying queen	$3.00
3 lb. pkg. with young laying queen	4.00

Extra Queens (any number) $1.00 each

We guarantee live delivery, a health certificate with each shipment, and service you can depend on.

Quality Does Not Cost — It Pays

The Wilbanks Apiaries Claxton, Georgia

WESTERN BEE TRIP

(Continued from page 210)

this laboratory consists of investigations on bee diseases. The following are the more important projects:

1. Resistance of various strains of bees to AFB. It has been shown that as a result of controlled mating, 100 percent resistance to this disease can be obtained.

2. Chemical control of AFB. The indications would seem to be that if sulfathiazole is fed at the time of innoculation, the larvae will not succumb as a result of infection.

3. Investigations of other bee diseases—as Nosema, European foulbrood, and paralysis.

4. Diagnosis of dead bees for disease and poisoning.

From this account it should be apparent that we saw and learned much of the more important research work on bees being conducted in the Northern United States. We also had a fine opportunity to observe some phases of commercial beekeeping and honey processing.

It is fitting that we close this article by thanking all of those who helped to make our past summer's trip so informative and enjoyable.

CAUCASIANS
CARNIOLANS

Hardy, prolific, rapid build-up, best of workers. Caucasians have longest tongue of any race. Often work on red clover. **GENTLEST OF ALL RACES.** Gentleness is safest in towns, near neighbors, or near the highway. Gentleness saves time, sweat, patience, and work.

Untested queens, $1.20 each, Air Mail

Discount on quantities. Ask. A few packages yet. Be back in our Glen Gardner, N. J., yards May 1st. Over 25 years a queen breeder.

Albert G. Hann
La Belle, Florida

Little & Moore Apiaries
Originally
LITTLE'S APIARIES
The John M. Davis Strain
GUARANTEED TO PLEASE
or money refunded
April 1st to June 1st:
1 to 10, $1.20 each
10 to 100, $1.10 each
June 1st to Nov. 15th:
1 to 10, $1.00 each
10-100, 90c each
Little & Moore Apiaries
Shelbyville, Tenn.

Prepaid Packages

We will send your bees prepaid to stations in the U.S. east of the Rockies if order is received this month, at these prices.

Three-banded Italians only
Safe arrival and satisfaction guaranteed.
2 lbs. with queen, $3.90, any no.
3 lbs. with queen, 4.90, any no.
Queens .90, any no.

Sunrise Apiaries
Petal, Mississippi

Package Bees
Italian Queens
For 1950

Packages with Queens:

	2 lbs.	3 lbs.	4 lbs.	5 lbs.
1-99	$3.00	$3.90	$4.70	$5.30
100-up	2.75	3.75	4.40	5.00

Queens 90c each Airmail postpaid —clipped on request.
No better quality at any price
Satisfaction guaranteed

Geo. A. Hummer & Sons
Prairie Point, Miss.
Established 1892

SELL MICHIGAN CLOVER HONEY
We furnish Dealers with best Michigan clover honey, in 60-lb. cans, at wholesale price. If you do not know Michigan clover honey, write us for full information. There is none better. Your customers will like Michigan clover honey. Always sell the best. Get on our mailing list, and see from time to time what we can furnish you.
Townsend Sales Co., Northstar, Mich.

HONEY BEES
Eugene Walker
Live Oak, California

STOVER QUALITY BEES

Priced Right

Italians Reared Right Caucasians

Shipped Right

By Express By Truck
By Mail By Air

Prices to May 20th
(Payable in U. S. Funds)

Lots of:	Queens	2 Pounds & Queen	3 Pounds & Queen	4 Pounds & Queen	5 Pounds & Queen
1-24	$1.00	$3.25	$4.15	$5.00	$5.90
25-99	.90	3.00	3.85	4.70	5.50
100-499	.85	2.75	3.55	4.35	5.10

Queens Postpaid — Airmailed or Clipped
(No Extra Cost)

For Queenless Package Deduct Price of Queen
Packages F.O.B. Shipping Point

The Stover Apiaries Mayhew, Miss.

(Member American Bee Breeders Association)

Italian Package Bees and Queens
1950

	2-lb. pkg. with queen	3-lb. pkg. with queen
1 to 5 pkgs.	$3.40 each	$4.30 each

Write for prices on larger quantities. No order too large and none too small.

Girardeau Apiaries Tifton, Georgia

No Matter Who Says What
Ours are just as good
Our prices are better

QUEENS, each $0.65
2-lb. package with queen 2.45
3-lb. package with queen 3.50

Write for complete price list

Gulf Coast Bee Co.
Schriever, La.

Protect Your Future. Buy Your Extra Savings Bonds Now.

Italian Bees and Queens

2 lb. pkg. with queen $3.00
3 lb. pkg. with queen 4.00
Queens, each ..... .85

A trial will convince you that 15 years of queen rearing will produce a queen worth far more than 85c in your hives.

All packages and queens quaranteed.

Mitchell's Apiaries
Bunkie, La.

Look for this Sign
When You Want
QUALITY AT LOW COST

Trade Mk. Reg.
U. S. Pat. Off.
KELLEY — "The Bee Man"

BEES and QUEENS

Young bees, free of drones—shipped when you want them. Young purely-mated 1950 queens. Three-banded Italians only.

2-lb. swarms young bees and
1950 queens $3.00
lots of 25 and up 2.75

3-lb. swarms young bees and
1950 queens 4.00
lots of 25 and up 3.75

1950 Laying Queens by prepaid air mail, $1.00 ea.; Lots of 10, 90c ea.

Walter T. Kelley Co., Box 210, Paducah, Ky.

HIGH QUALITY ITALIAN QUEENS & BEES

	2-lb. Pkg. with Queen	3-lb. Pkg. with Queen	4-lb. Pkg. with Queen	5-lb. Pkg. with Queen
1-29	$3.25	$4.00	$4.75	$5.45
30-99	3.10	3.85	4.60	5.30
100-up	2.90	3.60	4.35	5.00

Extra Queens, $1.00 each. I use only new, neat, light-weight shipping cages and guarantee live arrival, also health certificate. Open shipping dates available now. 10% books your order, balance due 10 days before shipping date.
Please write for reduced prices after May 1st
Carlus T. Harper — New Brockton, Ala.

BESSONET'S ITALIANS

The popularity of our stock must be deserved. The lifetime experience of three BESSONETS is behind every bee and queen.

Quantity	Queens	2-lb. Pkgs. with queen	3-lb. Pkgs. with queen
1-24	$1.00	$3.25	$4.25
25-up	.90	3.00	4.00

Bessonet Bee Company — Donaldsonville, La.

Mountain Gray
Bees and Queens

More than 25 years a breeder and shipper of this race of bees only, easy to handle, good honey-gathering gentle bees. Place your order now while we still have open shipping dates.

Prices to June 1st:

	Queens	2 lb.	3 lb.
1 to 24	$1.10	$3.75	$4.75
25 to 99	1.05	3.50	4.50
100-up	1.00	3.25	4.25

Packages F.O.B. Shipping Point

Bolling Bee Co.
Bolling, Ala.
"Dependable Service"

SPECIAL PRICES FOR MAY

We have 5000 Italian packages available for the month of May, at a price to suit anyone. We guarantee full weight, quality and satisfaction, health certificate with each shipment. Young laying queen in each package.

Prices as follows:
2 lb. pkg., $2.50 — 3 lb. pkg., $3.15
4 lb. pkg., $3.80 — 5 lb. pkg., $4.45

Willow Grove Apiaries
R.F.D. 1 — Mansura, La.

For Sale
Italian package bees and queens
Health certificate and live delivery guaranteed.
LYNN WILLIAMS
Mt. Shasta, Calif.

PACKAGE BEES & QUEENS

Use Our High Producing Stock to Overcome Low Honey Prices

Our Quality Three-Banded Italians have made many satisfied customers for us

	2 lb. w .queen	3 lb. w. queen	4 lb. w. queen	Queens
1-24	$3.25	$4.15	$5.00	$1.00
25-99	3.00	3.90	4.75	.90
100-499	2.80	3.70	4.55	.85

For Packages with Dadant's Starline Hybrid D.R. Queens quoted below, deduct the price of the 3-Banded Italian Queens and add the price of the Dadant Starline Hybrids.

Shipments Start About March 15th

GARON REARED Dadant's Starline Hybrid Disease Resistant Queens
Progeny Tested for Honey Production. Resistance to the foulbroods.
Large Brood Patterns and Reasonably Gentle.

1-24 .....$1.40 25-99 .....$1.30 100-499 .....$1.20

Live Delivery — Overweight packages to ensure at least full weight at Destination.

Quality — Service — Promptness

Garon Bee Company Tel. 8616 Donaldsonville, La.

PLANT'S

Productive, Vigorous Italians Gentle and Easy to Handle

WE GUARANTEE—
Queens are young, laying, and first quality. Full weight, young worker bees. New, light weight cages. Prompt shipment. Safe arrival and satisfaction. Health certificate with all shipments. Never any disease in our queen or package yards.

	1950 PRICES		
	2-lb. pkg. with qn.	3-lb. pkg. with qn.	Queens
1-50	$3.00	$3.75	$1.00
51-up	2.75	3.50	.90

38 Years' Experience

W. E. Plant

Hattiesburg, Mississippi

THE RICH HONEY FARMS Jeanerette, La.

Leather Italian or Caucasian Bees and Queens

EXTRA HEAVY PACKAGES POSITIVELY NO DRONES

Breeding stock from the highest producing non-swarming strains available

Italians or Caucasians:

	Queens	2-lb. Pkgs.	3-lb. Pkgs.	4-lb. Pkgs.
1-24	$1.15	$3.50	$4.50	$5.25
25-up	1.05	3.00	4.00	4.75

Produced by Rich Honey Farms
Dadant's Disease Resistant Queens:
A fine gentle non-swarming strain of superior gathering ability.
1-24.....$1.40
25-up..... 1.30

For packages with Disease Resistant queens, add 25c per package. For queenless packages, deduct price of queen. Queens shipped clipped, painted, or Air Mail at no extra cost.

Bright Italian Queens

Queens from our apiaries will give you beautiful gentle bees and service unexcelled.
Untested queens, 1-24, $1.00 each; 25-99. 90c each; 100-up, 85c each
A limited number of packages
Cotton Belt Apiaries, Box 163, Klondike, Texas

Three Band Italian Package Bees and Queens and Pure Italian Three Way D.R. Queens

Full Weight, Prompt Shipment, Young Bees
State Health Certificate with each Shipment
Live Arrival Guaranteed. Replacement or Refund made promptly upon receipt of bad order from your express agent.

1950 Prices
With Young Laying Queens

	2-lb.	3-lb.	4-lb.	5-lb.
Lots of 1 to 29	$3.25	$4.00	$4.75	$5.50
30 to 100, each	3.00	3.75	4.50	5.25
100-up, each	2.80	3.50	4.25	5.00
Untested Queens	1.00 each			
Tested Queens	2.00 each			

For Introduced Queen, add $1.00 per package
If queenless bees are wanted, deduct $1.00 from the package price

Jackson Apiaries Funston, Ga., U. S. A.

Beekeeping Insurance? Not Exactly

but DISEASE RESISTANT QUEENS

Reduce one of your Hazards

Parent stock officially tested and selected each year

		Packages with DR Queens			
Quantity	Queens	2 lbs.	3 lbs.	4 lbs.	5 lbs.
1 to 9	$1.30 ea.	$4.00 ea.	$5.00 ea.	$6.00 ea.	$7.00 ea.
10 to 49	1.20 ea.	3.75 ea.	4.75 ea.	5.75 ea.	6.75 ea.
50 to 99	1.10 ea.	3.50 ea.	4.50 ea.	5.50 ea.	6.50 ea.

Iowa Beekeepers' Association

State House Des Moines, Iowa

Brazos Valley Apiaries
Cameron, Texas

Bees & Queens

Brazos Valley Apiaries
Cameron, Texas

ITALIANS OR CAUCASIANS

	1 to 3	4 or more
2 lb. bees with young queen	$3.00 each	$2.75 each
3 lb. bees with young queen	4.00 each	3.65 each

Over a quarter of a century in the same place, in the same business, is my record. My motto: I will expect to do business with you again.

H. E. Graham Cameron, Texas